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Organisational Change and Performance: The Effect of Inertia, Extent of Niche Expansion and Organisational Characteristics

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Organisational Change and Performance:

The Effect of Inertia, Extent of Niche Expansion and

Organisational Characteristics

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Declaration

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Huijuan Wang

2011

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Abstract

Organisational change is one of the most popular and interesting topics in business, among both academics and practitioners. However, from previous research development in organisational change, the limiting conditions that apply to the two competing paradigms call for more empirical investigations in different organisational contexts (Aldrich, 1979). Enough research has been conducted on organisational change to make it clear that both content and process dimensions of change should be evaluated, and their separate effects need to be distinguished (Barnett and Carroll, 1995). The previous theories and analyses often tend to only one dimension. Furthermore, previous researchers comment that the dynamic effect of change has been ignored in recent tests of structural inertia theory (Delacroix and Swaminathan, 1991; Haveman, 1992; Kelly and Amburgey, 1991). Very few empirical studies seek to link change action to organisational performance, and the destabilizing effects of change have been assumed more than tested in the previous organisational research studies (Barnett and Carroll, 1995, Carroll and Hannan, 2000).

This thesis is one of the first studies to investigate the effects of both organisational change content and organisational change process outside Western countries. It seeks to escape from the binary distinction of adaption versus selection embraced by opposing theoretical camps, and looks for a more balanced stance. Drawing on the literature on organisational change in organisational ecology and associates the claims of managerial scholars, considers the above research suggestions, it directly examines the broader implications of inertia theory and recent developments in niche expansion theory relating with the measurement to dynamic performance consequences of organisational change. It integrates a number of important theoretical variables to address a variety of distinct theory fragments. These include expectation of firms' on

the survival threshold of change, regression toward the mean, time variance of the change effect, cascading change and the effect of organisational characteristics of opacity, asperity, intricacy and viscosity (Hannan, Polos and Carroll, 2007). It separately examines the effect of the change process on performance (Barrett and Carroll, 1995), empirically tests the effects of organisational characteristics on the change length and on the change process. Both the lack of studies outside Western countries and the lack of studies on the process of organisational change make this study a path-finding study.

This thesis is applied to a case organisation in the safety and filtration industry in China. It aims to test the generalizability of organisational change theories in this specific context and the predictability of change theories. In order to achieve these aims, this thesis adopts an in-depth qualitative research strategy and a detailed operational design. The qualitative methods it used were interviews, observation and documentation. The findings were consistent with the theoretical predications. There was a positive relationship between the experience of previous change types and the likelihood to adopt the same type of change in the future. It also demonstrated that there was a significant relationship between the extent of niche expansion and the change effect on performance. The more extensive the organisational change, the more unrelated the niche expansion move, and the more organisational performance is likely to be negative. The results also gave support to the predication of this study that the instant effects of organisational changes were harmful, but declined over time; organisational change might improve performance in the long run in the context of environmental transformation in the safety and filtration industry of China. However, the role of the pre-change condition to initiation change and the relations of the pre-change condition and change consequences were not obviously observed from the results of the empirical data collected in this study, the measurement model was re-estimated and further study to verify the results was suggested. Moreover, the organisational characteristics of intricacy, viscosity, opacity and asperity extended the length of the organisational change process, and the length of the change process

negatively affected performance. However, the result showed that opacity not only led to an under-estimation of the change length but also an over-estimation. It only happened in the change cases in which a similar type of change was previously implemented and the managers had relevant change experience with that change type. In order to demonstrate that the theories from the adaptation and selection camps are not mutually exclusively, this study examined the possibility of ambidexterity which is in the centre of the organisational adaptation camp (O'Reilly and Tushman, 2008). The results showed that a limited number of change cases conditionally supported the proposition's predication in this study: it was possible to simultaneously achieve flexibility and efficiency in the organisational change process, with the condition that only if a similar type of change was implemented previously and the managers had previous experience.

Finally, this thesis proposed that the theories of organisational adaptation and selection were complementary; some effects of change processes were interpreted better by one view than the other, and it suggested a possible way of disentangling the propositions to directly examine the elements influencing the change process and the consequences on performance functions by considering both theories. The findings of this paper have strong implications for future research into organisational change studies by several dimensions, and they shed light on several important practical issues in business.

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CHAPTER ONE

INTRODUCTION

1.1 Research Motivation

Over the past 30 years, China has been one of the world's fastest growing economies and one of the major contributors to world economic growth. However, the global financial crisis is threatening China's economy. The government reported that the gross domestic product (GDP) growth rate slowed to 9.9% in 2008. This was a 2.3% drop compared to the same time in 2007 (Ren, 2008). The World Bank estimates that it will be below 8% in the next few years. Statistics from the Ministry of Commerce also show that China's exports have been affected by the economic recession, with the growth rate decreasing from 27.1% to 22.3% in 2008. It is the first decrease in seven years and, so far, has affected over 2,000 mainly labour-intensive and export based enterprises. The data show that the recession drove away 600,000 migrant workers from a single province in China (Haskell, 2008). Economists continuously warn that this is just the beginning of the impact of this wave of the global crisis. In this dynamic and aggressive environment, if organisations are vulnerable to market change and take no countermeasures, the whole situation could deteriorate. Even without a financial crisis, the pace of change in the world today is dizzying because of economic globalisation and technology innovation (Ulrich, 1998). Organisations have to think about organizational changes more seriously than ever before.

The safety and filtration industry, which this study will look at, mainly involves

labour-intensive, export-dependent companies. Interestingly, the organisations in this industry were not affected by the economic conditions as much as other industries. The data show that some safety manufacturers in China and in the United Kingdom even achieved their most profitable performance ever in 2008. However, compared to other industries, this industry has been forced to restructure as the result of a continuing explosion of various diseases. For example, during the SARS period in 2003, the GDP decreased by 5–6% generally in China, and a considerable number of manufacturers were criticised, fined, or even closed down following the Chinese government's strict inspections and controls. By contrast, the turnover in all other organisations in the safety and filtration industry increased by 20–30% that year. The Chinese economy, compared to other countries, has various additional factors that affect decision making: combined market and government planning approaches; immaturity of market regulations; and political institutions and major policies, which are mainly established by the government, are prone to rapid change. As a result, managers in China need to attend closely to politics and regulations, while also focusing on the market. External conditions have a significant impact on strategic decisions made within organisations in China.

Moreover, the life of safety and filtration manufacturers are affected by rapidly changing technology and increasing regulatory expectations. The core technologies in this industry cannot be sealed off, but remain open to international influences. The history of the safety and filtration industry is relatively short in China; although it emerged only around 25 years ago, there have been dramatic changes since that time. For instance, from June 2001, the European Standard for particulate respirators was changed from EN149: 1991 to EN149: 2001, which means that all particulate respirators now have to provide protection against solid (non-oil) and liquid (oil) aerosols. The S (solid) class and SL (solid and liquid) class have been combined into three categories – FFP1, FFP2 and FFP3. These wider ranges of application must be re-tested through one of three regulatory bodies across the world which has the rights to authorize CE certificate. A certificate needs to be re-obtained before any market activity can take place. Technological standard restrictions and fast development created huge

pressures on manufacturers in this industry.

The target case organisation of this study, HDHY, was established in 1989, almost at the same time as this industry emerged in China. It was also part of the first generation of private companies in China after the open-door policy was introduced. Experiencing all the economic and political environmental changes which took place from that time until now, it expanded from a small filter fabric producer to a multiple products manufacturer with a wider range of products. While its product line was expanding and organizational restructuring was taking place, some changes were successful; others were not and brought many problems. For example, outside new manager buy-in was never achieved, the level of management could not align with the scale of organisational development; firm regulations could not be implemented; there was huge waste in the production process which could not be overcome; and managers preferred to hire workers/office staff recommended by relatives or friends. These dramatic organizational changes and uneven change processes made me want to investigate organizational changes and their consequences within the specific context of the safety and filtration industry in China.

1.2 Research Context

In reviewing the literature, I discovered there have been two main theoretical approaches relating to organizational change studies over the last 20 years: adaptation and selection. The first theoretical approach sees major organizational changes as being an adaptive process to previous changes in technology and the environment (Barnett and Carroll, 1995). Theories of this school typically include contingency theory, resource dependence theory and institutional theory. The other theoretical approach assumes that an organisation cannot change easily or that change involves great risk in response to changes in the external environment. According to this theoretical approach, new forms appear selectively to replace old forms of organisation. This approach is associated with organizational ecology (Barnett and Carroll, 1995). The major differences between these two theoretical camps concern rates of change, conditions of change, and the outcomes of change. Following development, a new research stream led

by Kelly and Amburgey (1991) and Amburgey *et al.*, (1993) emerged. They dispensed with distinctions of selection and adaptation and directly examined the phenomenon of organizational change and evaluated its various consequences. Following this suggestion, this study aimed to suggest a possible way to escape from the overly sharp distinction made between the two schools and consider their complementarity wherever applicable.

Taking into account previous research into organizational change, limiting conditions which apply to the two competing paradigms call for more empirical investigations in different organizational contexts so as to gain a multi-level understanding (Aldrich, 1979). Much was learned about the drivers and inhibitors of change but the temporal, situational and spatial contexts and processes were hardly considered at all. Explanations of change should be improved by insights into interaction between specific contexts and actions (Pettigrew et al., 2001). Enough research has been conducted into organizational change to make it clear that both content and process factors ought to be evaluated and that their effects need to be distinguished in most contexts (Barnett and Carroll, 1995). Previous theories and analyses often relate to only one dimension. Considering this advice, this study aims to empirically examine the effects of both change content and change process with the specific research context – safety and filtration industry in China.

Moreover, since a great deal of management theory relates to communication systems and political frameworks for the implementation of organizational change, Hannan, Polos and Carroll (2003b) suggested recording subsequent changes and better measuring the temporal aspects of reorganisation. They provided specific guidelines for conducting empirical research on rarely examined structural inertia, meaning that there is little direct empirical evidence of structural inertia. Further, Feldman and Pentland (2003) and Feldman (2000) challenged the traditional understanding of organisational routines as creating inertia. They explained that routines are a source of change as well as stability. Amburgey et al., (1993) argued the broader implication for change of organisational inertia. This leads to another main aim of this study.

Furthermore, previous researchers have commented that the dynamic effect of change has been ignored in recent tests of structural inertia theory (Haveman, 1992, Kelly and Amburgey, 1991, Delacroix and Swaminathan, 1991). Very few empirical studies seek to link change to organizational performance. Researchers' interest in the performance consequences of changes has been limited and there has been a debate as to whether change is helpful or harmful to organisations (Hannan and Freeman, 1984, Haveman, 1992, Zajac and Kraatz, 1993). In addition, financial performance is important and the major concern in the majority of organisations. Measurement of the consequences of change on performance could contribute direct practical guidance to business managers. As 'mode 2' knowledge production mentioned[1], more relevant applications need to be emphasised and there should be greater collaboration of scholars and practitioners in future business research. It is clear that 'what, why and how to do' should be set in the research development of a field of business (Pettigrew, 1997, Van De Ven and Johnson, 2006).

In addition, recent empirical organisational research has examined the consequences of niche change, and found that niche expansion was typically deleterious (Dobrev et al., 2003). To seek reconciliation of empirical work with theory fragments of structural change, Hannan et al., (2007) suggested to focus on niche expansion changes because it is more tractable. Henderson and Clark (1990) argued that some product improvements destroy the usefulness of the architectural knowledge of firms. This destruction is difficult for firms to recognize and to correct and therefore presents organizations with subtle challenges that may have significant implications on competitive performance. Considering the research context, product improvement and substitution is one ongoing characteristic of the safety and filtration industry, and the most frequent kind of change in the focal organization. Thus, based on the above suggestion and situation, this study examines both product expansion and product deletion to see their effects on

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[1] The relevance problem of academic management research in organisation and management is an old and thorny one. Here Mode 2 knowledge production focused mainly on the so-called field-tested and grounded technological rule as a possible product of Mode 2 research with the potential to improve the relevance of academic research in management AKEN, J. E. V. 2005. Management Research as a Design Science: Articulating the Research Products of Mode 2 Knowledge Production in Management. *British Journal of Management,* 16, P19-36..

organisational performance.

Ultimately, in this study, summarizing the above suggestions, it was necessary to move away from the binary distinction between the two camps of adaptation and selection, and attempt to take a more balanced approach, involving both adaptation and selection discussion under certain conditions to consider the possible synergy. I also attempted to extend our understanding of organizational change within a specific research context, the safety and filtration industry in China, which had never been done before. In order to explore the conditions of various types of organizational change, I examined and attempted to distinguish between the effects of the process of change and the content of change, aiming to provide direct empirical evidence to test inertia theory and part of the recent developments in organizational ecological theory. I also attempted to link change to its consequences on performance, so as to establish a model for assessing financial performance in order to develop organizational change theories. This paper adds to the new stream that disentangles the various propositions in the literature and directly examines the elements influencing the change process and the consequences on performance.

In addition, almost all management research focuses principally on the mature market of North America and Europe. It was found that management research in Asia covered only 17 out of 38 major topics in the existing literature and that these were covered by five or more articles in the top ten journals during the period from 1996 to 2005. In this same period there were only six articles on strategic change in the Asian context. This represents a huge gap in research which looks at future context specific studies (Bruton and Lau, 2008). As one of world's fastest growing economies, China is a far richer region than the research illustrates today. As far as we know, there is no empirical study to concentrate on safety and filtration industry. The author will take this context into consideration in this study.

1.3 Research Aims and Objectives

This study aims to better understand and test the conditions, elements and consequences of various types of organizational change in the research context of the safety and filtration industry in China. Specifically, it seeks greater predictive validity in organizational change theories and aims to test empirically the broader implications of inertia theory and modification of routines, in particular the effect of various change distances on performance based on the models that incorporate both ecological and managerial theories. It also considers the effect of organizational characteristics on change processes. This involves considering how diversification affects organisational performance.

Based on the above inductive and deductive processes, the research question of this study is as follows: "How and why do organizational changes lead to different consequences for performance?" In order to address the research question, and achieve the research aims, five objectives were identified as below:

1. To empirically examine the effect of prior change types on the likelihood of re-adoption in the future of similar types of change in the organisation;

2. To provide primary data to examine the effects of various change distances on financial performance by using both the ecological niche expansion change type model and the managerial diversification model;

3. To develop a dynamic performance measurement model that takes the interactive effect of organizational changes into account, and considers prior critiques of performance measurement in organizational change researches;

4. To supply the descriptive evidences and trace change processes, examine the effect of organizational characteristics, and analyse the relationship between change length and change effect. In doing so, the author draw on managerial ambidexterity theory and recent developments ecological theory - cascading change and organizational characteristics of intricacy, viscosity, opacity and asperity. The author also explain

and distinguish the effect of change content from change process of various change events in the focal organization;

5. To identify practical management implications for the organizations in safety and filtration industry, in particular for the focal organisation in this study, and to raise the awareness of the business managers to the effects of several important dimensions in organisational changes - change experience, change type, change distances and change process. In this way, the author hopes to assist the managers in formulating a proper strategy of organisational change that optimizes organisational performance eventually.

They address the concepts of change experience, change distance of product expansion, the interaction of change and performance, and change process. Each individual dimension of these change theory fragments was identified as an important element in change studies and was popularly discussed in organisational change studies for reconciliation of theory fragments. These concepts emerged from a review of the leading ecological literature on change, and they had not yet been studied together empirically. Additional interrelations between those concepts and propositions can be shown later in this study.

Moreover, in order to contribute to both theory and practice, the research context needs to be understood. As explained, because of the nature of the safety and filtration industry, with its rapidly changing technology and always growing product expectations, it supplies a very appropriate setting for the testing of organisational niche expansion theory. In addition, because the focal organisational has had a change history involving a certain type of frequent change, the effect of previous change experiences on the prediction of future type of change could be examined. Thus, these concepts were also potentially important to the firms in this industry and to the focal organization. Since the economic and political contexts are different in China, the effect of external environmental variations to process and the consequence of organisational change will be considered generally, so that the interpretation of this study can be more applicable to

organisations in this context.

1.4 Research Propositions

In order to address the research aims and objectives, and answer the research question of this study, the author identifies six propositions deriving from previous literature to test whether they can be applied to a totally different context – the safety and filtration industry in China, to see whether or not those propositions are supported by the results of empirical data, and to test the predictive validity of current organisational change theories by extending this approach to this specific context. To clarify, because the propositions are derived from very few empirical studies which are all from the western countries and because there is no prior research in this industry, or even in China relating to the topic of organizational change, this work is definitely a path-finding study with an exploratory nature. Consequently, this study will implicate only certain to the firms in the safety and filtration industry in China, and " at best, are generalisable to other identical situations and settings" (Sekaran, 2003). This claim will be assessed at the end of this study based on the results of the data analysis.

The author use propositions as a statement format instead of questions format, in order to provide a more structured theoretical discussion, and to make the research process more objective and precise. This study will present the literature discussion from two theoretical camps in organizational change studies; however this study did not propose the alternative propositions from both theoretical camps. Because of the exploratory nature of this study, it was not assumed that the results have to be one or the other, allowing other possible results derived from the empirical data under this specific research context. The propositions were concluded as an assumption, also based on the results of the preliminary stage of this study. They are as follows:

Proposition 1: The more experience the organisation has with a type of change

previously implemented, the greater the likelihood of adopting the same type of change in the future.

Proposition 2: There is a significant relationship between the extent of niche expansion and performance. The more unrelated the new niche moves are to existing domains, the more organizational performance is likely to be negative.

Proposition 3: The instant effect of organizational change is harmful, but declines over time. Organizational change might improve performance in the long run under the context of environmental transformation.

Proposition 4: Poor performance makes it easier to promote organizational change. Pre-change performance can moderate the change consequence, comparing the pre-change performance with the organisational unique mean, the change consequence on performance is more likely to be reversed.

Proposition 5: The length of the change process negatively affects the change consequences on performance. Four organizational characteristics - intricacy, viscosity, opacity and asperity - extend the length of the organizational change process.

Proposition 6: Ambidexterity (the capability of simultaneously achieving exploration and exploitation) is possible in the organisational change process.

1.5   Research Approach

Because this study addresses a relatively new research field where empirical study is rare, its approach will be interpretive and descriptive (Lichtenstein and Brush, 2001). Consequently, the research question will be addressed and the propositions will be tested in this doctoral thesis by a qualitative approach in which a semi-structure interview will be administered. Because of the sensitivity of the research topic, which limited access to more than one organization, a single case embedded design with

in-depth exploration is chosen. For consideration of the limitations of this method, historical time series data describing various organizational change events will be traced and financial data and other organizational archival documents will be collected. Participation observation will be adopted in the case organisation to further strengthen the data validity by triangulation. The replication logic of analysis sub-units will be achieved among selected change events. Rival theoretical pattern matching as the qualitative data analysis technique will be employed to enhance the validity. Nvivo software will be adopted to assist in the organisation of the qualitative data.

1.6 Research Structure

This study will be organised according to standard PhD thesis structure, by first presenting an introduction, and second introducing a comprehensive literature review of managerial and ecological views of organizational change. It will discuss the effects of different change contents on organizational performance, with emphasis on the examination of the implications of inertia theory and niche expansion theories; and will cover the dynamic change consequences on performance. In the second part of the literature discussion, the four organizational characteristics are examined for how they affect the change processes. Next, the research methodology and research design chapter follow, and after that two analysis chapters. The first analysis chapter mainly focuses on the effect of change content and consequences measurement. The second analysis chapter will test the effect of various organizational characteristics on change processes. The seventh chapter concludes the study with a discussion of the main findings, research limitations and suggestions, as well as the contributions to both knowledge and business practices.

CHAPTER TWO

ORGANIZATIONAL CHANGE LEVEL, CHANGE TYPE, CHANGE DISTANCES AND ORGANIZATIONAL PERFORMANCE

2.1 Introduction

In order to address the research question and better understand the structure of organizational change theories, this chapter will explore the current major theoretical discussion in this area, supporting the research aims of developing a sharp and insightful argument for answering the research question and testing the propositions.

The literature review is divided into two sections. The first section - Chapter Two - addresses the major issues in two camps of organizational change theories covering various organizational change levels and change types, the broader implications of inertia theory, niche expansions and diversification theories. It considers the effect of external environmental variation and the dynamic outcome of change on performance, including the interaction between performance and change. This study considers both adaptation and selection views simultaneously without assuming that either one explains organizational change and its effects. Finally, an integrated theoretical model of various types and distances of change is formulated and tested. The model of financial performance measurement by accessing four times is supplied. The final part of this chapter discusses important dimensions of change theory, such as organizational size, age and modality are mentioned.

Based on this literature review, this chapter develops four propositions that address different aspects of the research question.

2.2 Organizational Adaptation

Prior research on organizational change falls into two major academic camps: one focuses on adaptation and the other on selection. In the selection camp are organizational ecologists who argue change occurs through an evolutionary process of selection whereby new forms appear that selectively replace the old forms of organisation because they better fit the changed environment (Barnett and Carroll, 1995, Hannan and Freeman, 1984). They argue that most organisations are inert, that they cannot change easily or that changes entail great risks, and that the effect of change is generally disruptive. On the other side, in the adaptation camp are a more motley group of theorists who argue that organisations learn and are able to adapt to environmental change (O'Reilly and Tushman, 2008). Both sides have empirical support for their claims.

Historically, the dominant perspective in organizational studies was an adaptation perspective. From this point of view, organisations scan the shifting environment, formulate proper strategic responses and attempt to adapt to environmental change, in order to ensure good performance and long-term survival. Leaders or dominant coalitions make decisions and effect corresponding changes, responding to external threats and opportunities (March and Simon, 1958, Cyert and March, 1963, Thompson, 1967). The central adaptation theme has engaged many variations in the literature, including contingency theory (Thompson, 1967, Lawrence and Lorsch, 1967, Hellriegel and Slocum, 1978, Galbraith, 1977, Burns and Stalker, 1961), resource dependence theory (Aldrich and Pfeffer, 1976, Cyert and March, 1963, Pfeffer and Salancik, 1978, Thompson, 1967), institutional theory (Zucker, 1983, DiMaggio and Powell, 1983, Meyer and Rowan, 1977, Meyer and Scott, 1983), organizational strategy (Mintzberg, 1978, Miles and Snow, 1978, Miller and Friesen, 1984), and organizational learning theory (March, 1981, Herriott et al., 1985, Levinthal and March, 1981, Nelson and Winter, 1982). Some of them are outlined below.

Contingency theory claims that organizational structure has to match the external contextual demands of the environment, such as size and technology. Only if the organisations fit the external contextual features can they be more likely to have good performance and survival chances (Daft, 1983). Although problems of hidden implicit assumptions were pointed out in recent years (Schoonhoven, 1981), contingency theory is widely accepted in the organizational literature (Burns & Stalker, 1961; Galbraith, 1977; Hellriegel & Slocum, 1978; Lawrence & Lorsch, 1967; Thompson, 1967).

Resource dependence theory proposes that organisations seek critical resources from their environment, which creates uncertainty problems. Inter-organizational actions, such as joint venture and mergers, are attempted to minimise this uncertainty, increasing the survival opportunity and enhancing organizational performance (Aldrich & Pfeffer, 1976; Cyert & March, 1963; Pfeffer & Salancik, 1978; Thompson, 1967). Organisations can either adapt on their own initiative or seek to alter the environment. Executive succession is one mechanism for altering the internal power distribution and restoring equilibrium between the organisation and the critical dependencies in the environment (Salancik and Pfeffer, 1977).

Institutionalisation theory suggests that changes in features of formal structure in an organisation can often make the organisation more aligned with the changing institutional environment. Organizations adapt by adopting structures and behaviours that conform to their institutional features, so called rationalised myths, thereby enhancing their legitimacy (DiMaggio & Powell, 1983; Meyer & Rowan, 1977; Meyer & Scott, 1983; Zucker, 1983). The theory claims that enhancing organizational legitimacy by organizational changes can result in higher survival chances and better performance (Singh et al., 1986).

Organizational strategists emphasise the importance of strategic decisions and stress the stages of strategic decisions' formulation and implementation. They point out that adopting the proper objectives, plans, and decisions to achieve organizational goals is the critical responsibility of top managers, based on the understanding of internal

strengths and weaknesses of organisations, as well as the external opportunities and threats provided by environment (Mintzberg, 1978, Miles and Snow, 1978, Miller and Friesen, 1984). The extent of strategic organizational change is dependent on top managers enacting the environment appropriately to improve the organizational performance and survival possibilities (Singh *et al.*, 1986).

Organizational *learning theory* also offers an adaptation perspective on organizational change (Herriott et al., 1985; Levinthal & March, 1981; March, 1981; Nelson & Winter, 1982). Based on the feedback from environments, organizational learning theory consists of the modifications in goals, operation rules or routines, and programs (March and Simon, 1958, Cyert and March, 1963, March, 1981). Effective organizational learning could provide the means whereby an organisation can improve its routine functions rather than lose touch with environmental demands (March, 1991). Improving the efficiency of its routines is achieved by making accurate assumptions about the environment. However, Stinchcombe (1965) points out that these assumptions are generally formulated at the time of founding, and thus reflect the state of the environment at that time. Unless the routine is updated, the organisation will drift out of alignment with the current environment (Sorensen and Stuart, 2000). But an organisation can adapt if it reacts to the environment accurately.

From the discussion above, we can see that most adaptation perspectives emphasise intentional rationality. Under uncertain circumstances, organisations that show respect to environmental contingencies and develop the appropriate routines can be systematically successful (Singh et al., 1986).

Moreover, Dimaggio and Powell (1983) further point out that if the environment is not dramatically changing, new organisations are likely to model themselves after successful organisations. This 'mimetic isomorphism' process increases their chances to perform positively and achieve eventual success (Singh et al., 1986). From the adaptation perspective of organizational change theories, no matter if the changes have arisen from modelling or intentional rationality, organizational changes can secure

performance under certain conditions

Overall, the adaptation camp of organizational change theories includes multiple concepts, it is difficult to be defined (Lewontin, 1978). The approach taken in this thesis is to examine whether the prediction from a class of arguments is more consistent with the empirical result about the relationship between organizational change and their effect, than the other class of arguments -- that is to say, to test under what conditions the change effect is more disruptive or adaptive. It is beyond the scope of this study to attempt to contrast or disentangle the different adaptive perspectives.

2.3   Organizational Ecological Theory

The adaptation views of organizational change have been challenged by organisational ecology. The major ecological argument is that due to structural inertia organisations rarely make major changes, but when they do change, the consequences are disruptive (Carroll, 1984, McKelvey, 1982, Aldrich, 1979, Hannan and Freeman, 1984).

Four internal and four external pressures explain inertia. The internal constraints are the investment in equipment, plant, the specialised personnel and limited internal information received by the top leaders. Organizational history prevents alternative actions, and political support constrains change interests. The external pressures are legal and economic barriers to enter into and sometimes exit new areas; it also comes from limited information gathered by top leaders from outside, and the problems of collective rationality and the equilibrium (Hannan and Freeman, 1984). Underlying ecological theory, the important assumption is that organizational adaptation is limited by strong structural inertia pressure (Haveman, 1992).

The dynamic terms of structural inertia, which is regarded as a significant addition to earlier theorising proposed by Hannan and Freeman (1984), points out that structural inertia is seen as a consequence of selection process rather than a precursor. The concept should be elaborated in relatively dynamic terms that if the environment is

shifting at a faster rate than the rate of reorganisation, organisations have relatively inert structures (Singh et al., 1986). The distinction between absolute and relative inertia has been made. Strong absolute inertia implies that organizational structure and activities do not shift, the rate of organizational change is almost zero; whereas relative inertia implies that organizational change does not adjust quickly enough to catch up with a changing environment: the speed of organizational change cannot precisely coincide with a changing external environment (Hannan and Freeman, 1989: p 66). This paper refers to relative inertia with reference to external conditions.

Moreover, recent developments in ecology emphasize internal organisational arrangements that affect the change process. These are organization's formal architecture and informal culture. Architecture is represented as a code system, describing the 'formal specification and governance of organisation, reflected in the formal structure, that is, constructing the units which undertake the sub transactions. The architecture choices also specify the means of coordination between members, units, monitoring them and allocate the resources and rewards' (Hannan et al., 2007: P235) . The notion of culture includes 'both tacit knowledge of the work process details, including locally generated knowledge and professional knowledge; and norm of informal understanding and interaction practices' (Hannan et al., 2007: P261). The structural changes discussed in ecological theories commonly refer to the organizational architecture, focusing more on architectural rules which are more amenable to managerial manipulation than organisational culture or identity. However, the overall organizational culture is needed to decipher the structure control, most organisations leave open for some controlling of informal arrangements and culture.

Overall, organizational ecologists generally believe that an environmental selection approach is more appropriate than adaptation to explain population level changes. Organisations that fit the environmental demands will survive; otherwise they will be selected out of the population. Changes occur more in the form of replacement or selection – new organisational entries - than organizational adaptation.

In the remaining sections of this chapter, an integrated model is formulated from both the adaptive and ecological views to examine the effects of organizational changes on performance. The model discusses inertia theory and niche expansion theory which implicate the effect of change type and change distances and seeks compatibility between adaptive and ecological theories.

2.4 Introduction of an Integrated Model of Organisational Change and Performance

The two main perspectives, adaptive versus disruptive views of change, have been seen as in conflict (Astley and Van de Ven, 1983). One view describes change as mainly unproblematic and beneficial to performance, the other that changes are dangerous and generally have deleterious consequences. It seems plausible that different processes have different implication in various populations, as do different types of change, and empirical studies find that some changes are disruptive while some are adaptive (Haveman, 1992, Singh et al., 1986). Delacroix & Swaminathan (1991) argue for the need for similar studies in diverse contexts. It is possible that both views are partially correct, that one view is more appropriate than the other under certain conditions (Haveman, 1992, Baum, 1990, Amburgey et al., 1993, Singh et al., 1986).

Kelly and Amburgey (1991) and Amburgey et al (1993) pioneered efforts to understand both theoretically and empirically under what conditions some organizations can adapt in the face of environmental transitions whereas others do not. They avoid arguments about selection and adaptation by instead directly examining the phenomenon and evaluating the consequences of organisational change.

This thesis proposes that the adaptive and disruptive perspectives of change effects are not fundamentally incompatible, but are instead complementary (Singh et al., 1986, Levinthal, 1991, Delacroix and Swaminathan, 1991). This paper adds to the new stream of organisational change literature by exploring under what conditions, an ecological disruptive or adaptive is more appropriate to describe the impact of organisational

change than the other in the context of safety and filtration industry in China. It extends this literature by examining the effects of multiple kinds of change, in particular those theorized by recent work in organisational theory (Hannan, Polos and Carroll, 2007).

The rest of the chapter performs four functions. First, it seeks the coherence discussion from the change types in management theory and the change locations in ecological theory. Secondly, it challenges the traditional understanding of structural inertia in organizations, and attempts to explore the wider implication: whether there is an organisational change routine caused by inertia, or to say whether previous change experiences will influence the change types adopted in the future. It looks at when and why a change routine is more likely to be adopted, what elements could influence the degree of the effect of previous change experiences, so as to make it possible to predict the type of organisational change in the future. Thirdly, it explores to what extent niche expansion is more disruptive than adaptive by integrating both ecological niche expansion theory and the change diversification model. Fourthly, dynamic change consequences on performance are explored, and the interaction of change and performance is discussed. Propositions are formulated following the discussion.

2.5 Change Types and Change Locations

This section introduces the main strategic change types and levels in managerial theories and relates them to a discussion of ecological change locations, which both have important implications for changes outcomes.

In managerial theories, the type of organizational change is the key element influencing outcomes. There are four major types of change: adaptation, evolution, reconstruction and revolution (Balogun and Hailey, 2004). As shown in Figure 2.1, the nature of change is either incremental or big bang. Incremental change usually affects a part of the organisation over a longer period, whereas big-bang change usually happens when organisations suffer crises. There are two main change scopes: transformation and realignment. The distinction between them is that transformation cannot be handled

within the existing paradigm, but realignment can. There is no substantial change to the central assumptions and beliefs in an organisation for realignment to take place.

	Scope of	
	Transformation	Realignment
Incremental	Evolution	Adaptation
Big Bang	Revolution	Reconstruction

(with **Nature** label on the left side of the rows, and **Scope of** spanning the two right columns)

Figure 2.1: Strategic change types

Source: Balogun and Hailey (2004)

From Figure 2.1, we can see that both evolution and revolution are transformational in scope of change. Evolution is incremental in nature. It describes prolonged periods of growth, but no major upheaval occurs. Revolution describes substantial turmoil with a big bang nature (Greiner, 1972). It often occurs during a relatively short space of time, and needs a rapid response. This fast change may encounter a lot of resistance, and people may find it difficult for a period of time to accept such changes.

Moreover, a change cube model is proposed by Mintzberg, in which all types of change are divided into two categories: strategic change and organizational change. The strategic and organizational changes can vary from conceptual to concrete in each four-hierarchy level. In the strategic change category there are changes in vision, positions, programs and products, whereas organizational changes cover culture, structure, systems and people changes, each ranging from highly formal behaviour to rather informal, overt to implicit (Mintzberg et al., 1998). It is suggested that effective strategic change must be accompanied by the relevant organisation change at a similar level. Whenever the organisation would like to induce any chances, the changes in the bottom line of the change cube - 'products and people' - should be looked at first. Organizational renewal should start at the bottom rather than at the top (Clement, 1994).

Alternatively, Hannan and Freeman (1984) examine core and periphery features of organizational changes in ecological theories. They claim that core organizational change has four hierarchical features: organizational mission change, then authority structure, next technology and finally marketing strategic change. Hannan, Polos and Carroll (2003a) elaborate by suggesting that it is useful to think about the extensiveness of subsequent changes which follow the initial change in the organisation. Changes in the core require adjustments in related units of organisation. It is called a cascading change[2] and accounts for the indirect opportunity cost associated with the change transition. Thus, core changes lead to other cascading changes throughout the whole organisation while a periphery change will not. Furthermore, Dobrev *et al.* (2003) argue that what constitutes a core feature in one organisation can be a peripheral feature in another. These discrepancies exist not only in different forms and identities, but also in the same population. They argue that 'a more intuitive way of conceptualising core features comes from the insight that the adverse impact of transformation arises from its unintended effects'. A core feature is defined in terms of whether additional subsequent unplanned changes are induced by the initial change. Amburgey *et al.* (1993) speculate that the difference between adaptive and disruptive changes results from Hannan and Freeman's (1984) hierarchy of organizational attributes. Content (goal) is closer to the core, the technology and implementation strategy are more like the change process, and are closer to the periphery. However, if examined by using the change cube model, the technology and strategy can be core changes, and also can be peripheral changes.

Some theorists suggest that selection and adaptation models be considered in terms of the different consequences of core vs. periphery change (Dobrev et al., 2003). Core change is better described by an ecological view and is more disruptive, while periphery change is best described by adaptation theories and have fewer risks (Singh et al., 1986, Scott, 1981). However if comparing this division of change types with four types of strategic changes, there is some consistency among them. Incremental change is more like periphery change, whereas big bang is more like core change. Transformation can

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[2] The cascading change is discussed with more details in Chapter Three.

be thought of as initiating internal organizational change, while realignment results from organisation reacting to external environment.

From the comparison of the discussion of change effects from two models, organisations seldom initiate core structural changes, as they are unable to do so or cannot bear much risk due to inertial pressure (Barnett and Carroll, 1995). The core change is unstable and increases the probability of organizational crises and death. Changes in peripheral structures may lead to a lower risk of death. Greve (1999) argues that by disrupting internal routines and links with the environment, core change makes the firm subject to a liability of change, like liability of newness[3], less efficient internal function, lower external legitimacy, and lower performance until the process of rebuilt transmission is completed. Similarly, Balogun and Hailey (2004) propose that revolutions are few and difficult to attain, since they reshape the whole organisation. Most transformational change occurs through a more evolutionary path. However, Tushman *et al.*(1997) argue that most organisations are required at some point to undergo discontinuous or frame-breaking change. Each evolution period creates its own revolution (Greiner, 1972). In any organisation's life-cycle, periods of relative tranquillity will be punctuated with periods of frame-breaking change (Balogun and Hailey, 2004). Greiner (1972) further determines that smooth evolution is not inevitable and is closely linked with industry conditions. Evolution periods tend to be relatively shorter in a fast-growing industry and longer in a mature and slow growing industry, i.e. a rapid expansion market needs firms to add employees rapidly, thus the new structure to accommodate a large number of staff is accelerated.

Overall, it appears that the two models are not mutually exclusive; there are some similarities between the discussions of change types and relevant change effects in the two models. Moreover, both the change content and the way a firm manages strategic change make a demonstrable difference to organizational performance. The next section introduces the change content and change process as well as the necessity of

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[3] Stinchcombe (1965) offers four explanations for how change disrupts the routines and structures of young organisation, which he calls "liabilities of newness", and claims that young firms are unlikely to change.

discrimination of the consequences of each.

2.6 Change Content and Process

Organizational change is a transformation of an organisation between two points in time (Barnett and Carroll, 1995). It is usefully conceptualised in terms of both its content and process.

Change content describes what actually happens in organizational changes, which closely relates to the organizational goals defined by Hannan and Freeman as: 'the bases on which legitimacy and other resources are mobilised' (Barnett and Carroll, 1995: P219). Consequently, content change often involves the institutional status and modification of routines. One key aspect of research on change comes from comparing the organisation before and after the transformation, which constitutes an analysis of the change content. Major transformational change consists of radical shifts in a single element or many elements of structure. What the differences are between two points in time needs to be assessed.

Change process refers to how change occurs and is implemented. The importance of studying the process effect has been highlighted by Amburgey et al., (1993). The process of change refer to the way transformation occurs, which involves decision making, the communication system, speed of change, the barriers suffered and the consequences etc. The consequences of change are not only the difference of old and new characters, but also the cost associated with the disruption caused by the process of change, which would reduce the benefits of any positive content effects. Hence the effects of the change process are usually regarded as disruptive and destabilising. It is argued that the disruptive effect of change process depends significantly on a firm's origin and destination states (Baron et al., 2001). Dobrev *et al.*(2003) comment that the effect of the change process can be understood when the interplay between the environmental and internal forces which modify a transformation is consistently accounted for.

Previous studies link inertia to disruptive process effects and suggest that the content effect of change occurs independently, with the process effect lasting the duration of the transformation (Dobrev et al., 2003). Thus, the distinction between process and content is important analytically (Barnett and Carroll, 1995), and both are examined in this study. A closer examination of the process effects is undertaken in Chapter 3.

2.7   Inertia Theory and Modification of Routines

Structural inertia theory has motivated numerous researchers to explore the effect of organisational change. There are four types of process delays impeding organisational changes (Hannan et al., 2003a). Inertia theory addresses the structural processes and pertains to changes to the core features of organizations.

Structural inertia first states that the condition at the time of founding must shape an organisation (Hannan and Freeman, 1984). Secondly it suggests that the organisation is more likely adhere to current routines, because strong inertial forces keep organizations from change and the resistance to change lengthens the time necessary to make a change. Organizations are likely to behave according to the previous routine and experience, which is called a good first approximation (Nelson and Winter, 1982). Structural inertia develops a mechanism to explain why many types of organizations are not willing to initiate change in their core feature and are thus unlikely to change. Theorists who adopt an inertia view of strategy argue that an organisation is constrained and better able to preserve its existing strategy than it is to change radically. Architectural change is generally deleterious because reorganizations impose costs, reduce fitness levels, take attention away from operations, and thus reduce performance. Haveman (1992) comments that reorientation periods from operating to restructuring lowers the efficiency of operations, leads to poor performance in the short term and might lower a firm's chances of survival in the long term.

The implication of inertia has been broadly explored. Inertia theory not only refers to

organisational operating routines, but also to modification routines, which are the procedures for creating and changing operating routines (Amburgey et al., 1993). The more experience organizations have in changing operating routines, the more likely a modification routine is to be developed. In momentum – like fashion, type of change made in the past is especially likely to be repeated in the future. The early occurrence of a given type of change increases the probability of subsequent similar types of changes (Amburgey et al., 1993). Organizations have momentum to repeat previous changes, reinforce and extend their past structure and practices adhering pervious evolution direction (Miller and Friesen, 1984：P28). Furthermore, the more experience a company has of a particular type of change, the more likely it is that this type of change will be applied to a broader set of problems. Historical actions have powerful influences on both the possibility and content of change (Kelly and Amburgey, 1991). However, it is pointed out that this paucity of experience causes managers to limit the scope of their market activity and miss opportunities (Miller and Chen, 1994).

Although inertia is often viewed as dangerous, potential benefits have been noted (Nelson and Winter, 1982, Hannan and Freeman, 1984, Amburgey and Miner, 1992). Potential benefits of inertia are that it can minimize the cost of blunders coming from change decisions made with incomplete information (Hannan and Freeman, 1984); Because the cost of change effort decreases, the prospective benefits of change offered is at a lower level to catch, hence it is more attractive to be carried out (Amburgey & Miner, 1992; Kelly & Amburgey, 1991). Indeed, Hannan and Freeman (1984) argue that inertia is a by-product of success. Inertia can also generate greater reliability in delivering a sound product and efficiency routine (Miller, 1992). Sorensen & Stuart (2000) add that experience with a set of routines leads to gain the efficiency which are executed before. 'The experiential learning translates to a survival advantages when implementing a change consistent with past experience is warranted' (Dobrev et al., 2003：P277). However, they also argue that whether or not it is beneficial depends on the mechanisms by which firms interpret and respond to the environment.

Moreover, inertia implies that the search process for solutions begins with the most recently used routines. As the elapsed time since the last change of the same type increases, the probability of a given type of organisational change decreases (Cyert and March, 1963). Elapsed time is a better indicator of accumulated experience than age, because change resets the an organisation's experience clock. Amburgey et al., (1993) argue that changes occurring later in the life cycle take longer to produce an adaptive outcome. In addition, the occurrence of change makes an organisation temporarily more malleable. Once the inertial forces inhibiting change have been overcome, momentum means that an organisation in motion tends to keep in motion (Amburgey et al., 1993).

Furthermore, since culture is strongly influenced by previous experiences and reflects the imprinting of the firm's early history, once established and taken for granted, culture is difficult to change (Stinchcombe, 1965). Thus organisational culture also has inertial tendencies (Hannan and Freeman, 1984, Schein, 1991). Changes which break codes generally encounter cultural opposition, so such changes are usually problematic[4]. The degree to which an organization's culture restricts its architectural choice is defined as asperity (Hannan et al., 2007). The cultural code is restricted in that it only allows a limited range of possible rules and structures, so many possible alternatives are not morally acceptable; and the membership understands and embraces the culture and becomes willing to enforce sanctions when any violations are detected (Jacobs et al., 2008), while likely not opposing changes that are similar to those made previously. Amburgey et al. (1993: P71) add that 'if the goals are changed early, they are more likely to change again later, if they are not changed early, they are less likely to change again.' The argument above leads to the following proposition:

Proposition 1: The more experience an organisation has with a type of change previously implemented, the greater the likelihood of adopting the same type of change in the future.

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[4] More discussion relating with organisational culture are in next chapter.

2.8   Niche Expansion and Diversification Change

The destabilizing effects of change have been assumed more than tested in previous organisational research, and very few empirical studies link change action to change consequences on organisational performance (Barnett and Carroll, 1995, Carroll and Hannan, 2000). This part of paper examines the effect of niche expansion and various niche expansion distances on performance by integrating two models from both ecological and managerial theories, without assuming one academic camp is better than the other. Niche refers to the organisation position in a market where its products engage customers. Niche expansion occurs when the organisation establish engagement at a new market position, and does not drop any (Hannan et al., 2007).

Typically ecologists believe that niche change induces deleterious outcomes for two reasons. Firstly, it takes time to establish the engagement in a new position and this diverts resources from the current activity in the transitional period. According to niche theory, an organisation does not fully control its fundamental niches[5]. It can expand its engagement (the set of positions that organisation adds to its engagement portfolio) rather than its niches directly. Normally there is a delay, which is called latency, gaining positive results from a new engagement[6]. This is because it takes time to generate local intrinsic appeal in a new position and because 'expanded engagement presumably initiates a period of reduced total expected actual appeal' (Hannan et al., 2007, p. 274)[7]. This process entails costs and requires learning about the new audience because a company's role in the domain involves agents who inspect, evaluate and consume the output of producers. As no benefit is received in latent periods, expansion heightens an organization's vulnerability to competition in the original niche. Moreover, if the latent period is longer and exceeds the delay in converting returns into scale, there is a further negative effect in that a drop in scale lowers the company's appeal and lowers returns

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[5] Fundamental Niche: "A fuzzy set of social positions with grade of membership in a position is its expected actual appeal to agents with the typical taste for a category at the position" (Hannan et al., 2007, P309).
[6] Engagement: "A diverse set of actions including (1) learning about the idiosyncrasies of the local subaudience, (2) designing feathers of the offering to make it attractive to that audience, and (3) trying to establish a favourable identity in the relevant subaudience" (Hannan, et al., 2007, P308)
[7]   Actual appeal: " The relative attractiveness of a product offering to an audience member. Actual appeal grows with intrinsic appeal and engagement" (Hannan et al., 2007, P305).

(Hannan et al., 2007). In addition, the latency characteristic might imply that firms with a strong culture can weather short periods of volatility without suffering a drop in performance. However, from an organisational learning point of view, March (1991) argues that organisational change often benefits a company in the short run but is damaging in the long run. Delacroix and Swaminathan (1991) argue that a new practice may or may not be more adaptive than previous actions, but the initial phase will be extremely disruptive and this may incapacitate the company in the long term.

The second reason for a deleterious outcome of niche expansion is that expansion often entails architectural reorganisation and, as a by-product of structural reproducibility (Dobrev et al., 2003), gains from the appeal to a new position are delayed. Previous empirical studies show that the consequences of niche changes often depend on the structure of an organization. An organisation with shorter cascading change generally realizes gains from new appealing more quickly than an organisation with a longer cascade. This implies that the contexts of an organisation– its intricacy, viscosity, opacity and asperity [8] - make expansion more precarious. Intricacy strengthens coordination problems, makes it take longer to develop a plan and get agreement for implementation, get feedback and make adjustments. Opacity might lengthen the latency period, and delay a positive return from expanded engagement because it causes confusion and complications about the effect of both anticipated action and unanticipated action. Similarly, high asperity firms are less likely to fully embrace and implement proposed changes. Thus, the returns of niche expansion take longer in firms with more intricacy and asperity.

Moreover, when organizations choose a market position without full knowledge of the

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[8] The details of organisational four characteristics- opacity, asperity, viscosity, and intricacy will be fully discussed in chapter three. The definitions are as follows:

Intricacy is defined as " a strong and complex pattern of interconnections among an organization's component units. Specifically, intricacy is the mean of the centralities of the units in the organization." (Hannan et al., 2007, P309).
Viscosity is defined that "the expected time it takes for an organisational unit to respond to induced architectural code violations and bring local architecture into code conformity." (Hannan et al., 2007, P312)
Opacity is defined as "an incomplete view of the connections among units of an organization" (Hannan et al., 2007, P311)
Asperity is defined as " the degree to which an organization's culture restricts its architectural choices" (Hannan et al., 2007, P305).

customers' preferences from that position, it is difficult to evaluate the benefits of new market position before entry. This uncertainty also leads to the deleterious outcome of niche expansion, causing organizations to overvalue a new position or fail to expand (Dobrev et al., 2003).

From strategic classification schemes, generalists with a broad niche benefit from internal variation, selection based learning (Weick, 1969), whereas specialist firms base their success on exploiting a single narrow niche. Therefore, greater flexibility and higher capacity for adaptation serve generalists and protect them from the negative impact of process change (Dobrev et al., 2003). However, if generalists are more complex and have a more hierarchical structure, the duration of their change process will be correspondingly longer, and the possibility of a hazardous effect of changes occurring will be higher (Singh et al., 1986). In addition, the relative momentum of change will decrease when the organizational niche expands. They are less likely to initiate change, since innovation might have been the routine within the context of the organizational structure (Dobrev and Barnett, 2002).

The concept of diversification (Romanelli, 1989) is related to niche expansion. Diversification strategies are used to cope with environmental change and views on this are widely evident in the managerial literature. Rumelt (1982), Brittain and Wholey (1990) and Amburgey *et al.* (1993) claim that diversification is a response to environmental change linked to organizational characteristics, and they argue that it must affect organizational structure. Proponents believe that diversification is beneficial since it leads to greater fulfilment of consumer demands. Hannan and Freeman (1977) point out that diversification is a primary means of reducing risk. However others argue that there is no clear demonstration of the relationship between diversification and any aspects of performance (Keats and Hitt, 1988, Grant et al., 1988). Another compelling view is that although diversification has advantages, based on cost considerations, the effect on production line expansion will generally be damaging (Kekre and Srinivasan, 1990). It is inherent in organizational ecology that product line extension must disrupt the internal structure and operational routine of a company and alter its organizational

core, thus affecting the reliability of performance (Amburgey *et al.*, 1993; Hannan and Freeman, 1989; Haveman, 1992).

One practical implication is that a product having lower strategic importance but with operational leverage benefits, could be either internalised or contracted out, while a product that is strategically important but without benefit to the current operation should be part of a new business as an independent unit (O'Reilly and Tushman, 2008). But if the new opportunities both have strategic importance and leverage to the current operations, where ambidexterity[9] will be most appropriate, it is suggested that the exploratory unit spin out to decouple the inefficiency and sacrifice of the financial performance if separating from the organization's operational core.

2.8.1   Change Distances and Effects

Some prior research has focused on the extent of expansion, and the speed of engagement differed in close and distant positions, depending on an organization's features. Latency increases with the distance of a position from the organization's region of peak appeal[10] of the producer's offering, and also increases with the distance of a position from the fundamental niche. The greater the distances are, the less applicable the expansion is. Because more has to be learned, more time is needed for the actual appeal (Hannan et al., 2007).

The distance of niche expansion are classified into four types by Hannan *et al.*, (2007) as follows: 1.) If expansion adds the position to the edge of the earlier niche, it is *continuous* expansion (Type I). This type of niche expansion does not usually imply architectural change, thus the hazard of this extension is lowest compared with other types. 2.) The niche expansion is *distant* (Type II), if the position added to a previous niche is separated from the earlier one. The result of a distant expansion is that the

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[9] Ambidexterity means combining the function of exploration and exploitation, and will be discussed in detail in next chapter.
[10] Peak Appeal: "A set of social positions in which a producer's offering has its maximal appeal" (Hannan et al., 2007, P311).

number of current cavities[11] becomes one more than previous cavities in old niches, the new one lying outside the ex-ante niche. If the organisational expansion is of this type, the new units are likely to be created to collect all the resources required to secure engagement and appeal in the new position. Adding units must increase opacity, which makes the change process hard to predict. However it does not increase intricacy under some circumstances. It would be of value to explore the process of niche expansion implementation, and this project will do so. 3.) Type III—*gap creating continuous* expansion is continuous change adding to the edge of an earlier existent niche, but the appeal lowers the position of the ex-ante niche, or if the total appeal and engagement are fixed, then the lowered engagement creates a gap in the previous niches. The consequences of type III increase both intricacy and asperity. 4.) The most risky type is gap-creating distant expansion (Type IV). This involves adding further away from earlier niches, and the lowered engagement creates a gap in previous ones. Although Type II, III and IV all trigger architectural change, this one leads to the most radical change. The consequences are that asperity, intricacy and opacity all increase, combined with the effect of type II and III. Asperity increases because of the redundancies of engagement in new social position, intricacy rise since it shifts the existing the inter-unit connections, and opacity grows due to the distant positions of new units. Hence, the mortality hazard of type IV is the highest.

In the field of management, a large body of work argues that the impact of diversification on performance is contingent on the degree of new activities relating to the original domain of core competences (Ramanujam and Varadarajan, 1989). Ramanujam and Varadarajan distinguish between related and unrelated diversification by referring to three dimensions of the original organisational domain: products, clients and technology and they claim that the extent of each dimension is affected by new activities (Levine and White, 1961, Thompson, 1967). Diversification of one organisational domain must have a less harmful effect on performance than radical diversification dimensions (Haveman, 1992). For example, offering old products to new customers with a similar technology only requires adjustment in one dimension. If

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[11] Cavity: "A gap or hole in a niche(defined over a metric space)" (Hannan et al., 2007, P306).

offering totally different products with brand new technology to new customers, it will require radical modification with more risks, and will be more harmful to performance. It is proposed that there are three main benefits of related diversification, which supports niche expansion theory: 1) It can reduce the average cost of long term economies of scale, and rationalise managers' tasks, production and market opportunities; 2) It can generate additional resources to enhance core competency. 3) It can reduce the variability of the income stream. Firms with a controlled diversity (related diversification) strategy can outperform firms with an unrelated strategy (Rumelt, 1982). Barnett and Carroll (1995) conclude that the more extensive the organisational changes are, and the more unrelated the diversification moves are, the more likely it is that an organisation will experience poor performance, at least temporarily (Audia, Locke, & Smith, 2000; Henrich R. Greve, 1999; Miller & Chen, 1994).

Overall, these models suggest managers should analyse different extents of niche expansion or diversification in order to predict outcomes. Based on the above, the second proposition of this paper is defined as follows:

Proposition 2: There is a significant relationship between the extent of niche expansion and performance. The more unrelated the new niche moves are to previous domains, the more organizational performance is likely to be negative.

2.9 Effect of Environmental Variation

It is unlikely that a specific change is beneficial or deleterious under all circumstances (Delacroix & Swaminathan, 1991; Haveman, 1992; Singh et al., 1986). The benefits and costs of the change must depend on the organizational characteristics and environmental conditions. It is particularly important to make the connection of macro and micro conditions such as between environmental variation processes and internal structural changes (Pfeffer and Salancik, 1978, Carroll, 1984). It is also claimed that as businesses have different technologies and goals in different periods, the change processes of each

organisation may have an important role in explaining population changes (Singh et al., 1986). However the relationship between environmental conditions and organizational responses is thinly examined empirically in organizational studies (Jauch et al., 1980). The effect of the environment variable on the consequences of organizational change is discussed here.

In the previous research, the relationship between patterned environmental change, strategy decisions and organizational success is formulated (Freeman and Hannan, 1984, Wholey and Brittain, 1989). The magnitude of environmental variation is correlated with the likelihood of organization's making a change (Delacroix and Swaminathan, 1991). This interaction is important because it reveals the internal mechanisms through which firms interpret and respond to external context. The antecedents of change, at least in part, hinge on the internal processes of response to the environment (Dobrev et al., 2003).

However some theorists argue that organizational changes which respond to environmental variation are largely cosmetic and pointless, and are less likely to touch their technological core, and are hence without serious ill-effects and no fundamental adaptation. Hannan *et al.*, (2007) claim that the core changes are found to have two consequences: The first is an immediate increase in the hazard of failure, the second is an increase of additional changes of the same type. In both cases, the immediate effect is usually a decline of performance; however, the immediate effect will decrease over time. Another view claims that organisations generally find it difficult to make the changes right, and the effect of environment variation could make the organisation revert to an earlier stage, which is consistent with structural inertia theory. Meyer and Scott (1983) supply the evidence that the most successful organisations did the least to adapt to the environmental jolt, whereas those who scrambled hard to update their practices were in trouble. Romanelli (1989) further proposes that generalists have better encounters with environmental munificence than specialists, which is conducive to internal structural differentiation. There is another view claiming that there is no clear demonstration of the relationship between diversification and environmental

munificence (Keats and Hitt, 1988). Kelly and Amburey (1991) agree that there is no association between discontinuous environmental change and increased possibility of organizational change.

The relative inertia concept suggests that researchers should consider contextual factors that may have an impact on the consequences of organizational changes: such changes should have different consequences under different external conditions (Singh et al., 1986). If environmental conditions affect performance suddenly, the organisation is unable to offer the consistency it had been providing under the previous operation and structure (Gersick, 1991, Haveman, 1992). There are two possible outcomes if an organisation reacts to environmental transformation: 1.) Change will hurt performance since it resets the 'liability of newness' clock (Stinchcombe, 1965), and resources are channelled from operation to restructuring; 2.) Change will improve performance because it fits the environmental demands; the losses from restructuring of the organisation are less than the gain from the new environmental conditions. Organizational change could benefit performance in response to dramatic environmental restructuring, but it should build on established routines (Haveman, 1992). But if the new organizational activities are not related to the dominant niches, no matter what the external transformation is, it is harmful to organizational performance. Considering the variable of external environment variations, it is consistent with the second proposition that this paper has predicted.

In addition, some suggest focussing on technological change as the force behind the restructure of environmental conditions. Astley (1985) criticises the value of this punctuational thinking, and claims that if the external technologies environment is systematic, it will not favour the organizational change (Barnett, 1990). Technological change may be adaptive or not, depending on the comparison between the benefit of organizational technological improvement and the benefit from other technologically advancing organisations which occupy market niches. Based on the above argument and the discussion of the previous sections, it leads to the following proposition:

Proposition 3: The instant effect of organizational change is harmful, but declines over time. Organizational change might improve performance in the long run under the context of environmental transformation.

2.10 Change and Performance

Change action and its effects should be associated to be discussed (Denis et al., 2001). There are three main types of consequences of change actions identified by Denis *et al.* (2001): 'symbolic', 'substantive' and 'political'. 'Symbolic' consequences are the effect of changes which happened in the dominant strategic frame or scheme (Hinings and Greenwood, 1988, Meyer and Rowan, 1977, Denis et al., 2001). They refer to the type of change action in which there are no substantial changes to the central assumptions of the organisation. The 'substantive' effect concerns the changes which allocate resources, restructure the organisation and realise strategy. The 'political' outcome concerns the evolution of leadership in terms of the distribution of formal and informal power. The effect of change on performance has rarely been examined empirically. It is recommended that the link between change action and organizational performance is associated to be explored (Pettigrew et al., 2001).

Some scholars are motivated by inertia theory to focus on the performance consequences of organizational change. Amburgey *et al.* (1993) argue that evaluating the performance of an organisation entails considerable ambiguity, especially if the attributions of causality are required for advocating additional change. However performance variability is an important outcome in its own right and plays a central role in a variety of theoretical approaches to organisations and has real practical implications for managers (Sorensen, 2002). The study of performance consequences of change is increasing in popularity and has the potential to make a significant contribution (Greve, 1999).

There is a conflict between the need for reliable organizational performance and the need to change in react to changes in the environment. One view emphasizes selection

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processes whereby an organisation with high reliability ('low variance cross-sectionally and over time' with quality level promised) (Haveman, 1992: P588) and high accountability ('could account rationally of their actions') (Haveman, 1992: P588) must maintain a highly reproducible and stable structure; whereas high stability will generate strong inertia pressures. External stakeholders typically attach value to reliable firms and predictable performance which offers higher survival chance. Inversely, investment enhances the reliability of firm performance. Generally, firms benefit from reduced variability in performance.

However, environmental changes can pose twin threats to performance reliability: creation of internal problems by increasing the likelihood of failure in communication, coordination and control; and rendering existing routines inappropriate (Sorensen, 2002). Hence, performance reliability in the dynamic environment depends on two main factors: the consistency with firms' routines and the degree to which these routines are well adapted to a changing environment. The interaction between change and performance is explored next.

2.10.1 The Role of Pre-change Performance

Poor performance acts as catalyst to change when managers take actions in response to a decline in performance (Boeker, 1997; Cyert & March, 1963; Keisler & Sproull, 1982). It is the motivator for problem solving (March and Simon, 1958). Managers who perform poorly or fail to meet performance targets are more easily overcome in their resistance to change and risk seeking (Finkelstein and Hambrick, 1996, Kahneman and Tversky, 1979). Also poor performance can stimulate a manager to scan the environment, and this problem-driven search process could generate important information that will promote correct adjustment actions (Cyert and March, 1963, Levinthal and March, 1981). Miller and Chen (1994) argue that poor performance may only induce tactical changes which are generally easy to make. It is possible that those changes threaten administrators, who try to maintain their power. Thus, the strategic change decisions are less responsive to performance improvements than tactical

decisions. There is another view that claims that managers decide to change simply because they tend to break with past patterns and practices, and demonstrate their power (Wiersema and Bantel, 1992, Amburgey et al., 1993).

Furthermore, it is examined that if the probability of survival is the threshold to change, and if the performance is higher than this threshold, then change is for a higher expected value, or change is for competition with great risks. 'A failing organisation that changes may increase its probability of survival but lower its life expectancy' (Greve, 1999: P611). The survival chance increases because change could lead the organisation above the survival point, and the life expectation decreases because change might fail, and accelerate the organisation's death. The survival probability and change threshold depends on the expected value and variance. It may compromise between them since a lower expected value is acceptable if a higher variance is given (March, 1991). As it is difficult to identify this threshold of survival, it is suggested that research should go beyond it and endeavour to focus on investigating the change process, and this study does so.

Alternatively, good performance may lead to inertia and resist change (Hannan and Freeman, 1984). There are several reasons, first reinforcements: rewards and punishments (Miller and Chen, 1994). Good performance leads managers to believe their practices or rules are right, which make them resist change (Milliken and Lant, 1991, Miller and Friesen, 1984, Lant and Montgomery, 1987). Secondly, success performance could initiate less vigilance, less environmental scanning and information which might blind managers for further actions (March, 1981, Miller et al., 1994). The managers feel safe using the past rules, and ignore external environmental change (Dutton and Duncan, 1987). Thirdly, good performance could foster a corporate culture that makes leaders into heroes and power centres, thus resisting change. They derive much respect, status and power from the successful strategies, and easily fend off challenges to their routines (Boeker, 1997) .

Moreover, Greiner (1972) argues that easily attained profits can lead to prolonged

evolution and delayed revolution. As long as performance is above a survival threshold level, the organisation tends to persist in repertoires and form a habituation of routines (Nelson and Winter, 1982). 'The longer such firms have been successful, the greater the extent to which resistance to change and inertia will prevail' (Boeker, 1997: P154), and the less likely that external changes can lead direct and immediate change (Tushman and Romanelli, 1985). However it is argued that firms that are more likely to change will have greater expected performance than the firms less likely to change (Greve, 1999).

Conversely, the accumulation of organizational changes may decrease the performance level, and negatively affect the survival chances. Frequent reorganisation may reduce organizational performance reliability and increase the probability of failure (Hannan and Freeman, 1984). March (1981) argued that change maybe on average harmful, but there are many variances around this average. It is moderated by performance before the change, and affected by regression toward the mean (Harrison and March, 1984, Brown, 1982). Firms having lower performance than the mean are likely to be followed by higher performance after change, but it is harmful for successful and big firms, which are more likely to lose because performance above the mean is likely to be followed by lower performance (Greve, 1999). Further, because of greater differences in capability and decision making, each organisation will regress towards its unique mean instead of market mean. So if performance is lower than it has been in the past, even it is higher than other companies, the efforts to preserve the status can cause risky conditions. It is found that organisations pass periods of volatility that will change into periods of relative stability due to its dynamic nature (Tushman and Romanelli, 1985, Steindl, 1980, Greve, 1999, Dosi, 1984). Consequently, proposition four is concluded here:

Proposition 4: Poor performance makes it easier to promote organizational change. Pre-change performance can moderate the change effect, comparing the pre-change performance with the organisational unique mean, the change consequence on performance is more likely to be reversed.

2.10.2 Performance Measurement

Performance measures such as market share and financial performance are interesting in themselves. They can be used well to measure the dynamic time effect of organizational change. Previous studies find that the failure rate can measure the time effect of change for testing inertia theory, but also suggest that both failure and performance be studied. Greve (1999), however, argues that no matter whether failure or performance is studied, solutions to the problems in the change content and process within the specific context are needed. In line with this suggestion, considering the nature and the aims of this study, it looks at dynamic changes in performance with an aim to supply practical suggestions.

It is meaningless to practitioners to only count changes. Organizational performance is not only an indicator but also the base of competition and various capacities (Pettigrew and Whipp, 1991). Studies of the performance consequences of change tend to attract methodological critiques. Performance is typically measured in three ways: 1) profits, turnover, market share as the outcome indicator; 2) price, quality, product variety and production capacity and efficiency as the bases of competition; 3) the technical knowledge, capacity for continuous learning and change as the capacity measurement. Kotter *et al.* (1992) and Smith *et al.*(1994) suggest that the accounting measure of how profitable a firm is uses the investment capital; yearly return on invested capital (ROI) is commonly used in the studies of corporate performance. But Miller and Chen (1994) argue that it is rarely calculated and is influenced by interest rates, debt-equity ratios, tax anomalies, depreciation policy and many other factors, and has little direct connection with the change actions incorporating with measurement of inertia. Some suggest that organizational growth is a good measure of firm performance (Boeker, 1997), but others argue that turnover growth is a superior measure and is normally used for performance (Singh et al., 1986).

For this study, financial performance will be used. Two financial variables will measure performance: turnover and net profit (total income minus total expenses, which is a flow

variable that assesses the profitability of each period's operations) (Haveman, 1992, p. 59). This is supported by the works of Boeker (1997), Greve (1999), Haveman (1992), Miller and Chen (1994), Ocasio (1994) and Singh *et al.* (1986). In addition, the general evaluation of organizational performance from the focal case organisation is complementary and will be considered.

In order to avoid any plausible change effect on performance and alternative explanation, the author agrees with previous researchers that of course even when the organisation does not change, its performance is uncertain and affected by other unpredictable events in the environment. Unobserved factors may lead firms to higher or lower levels of performance. Asperity and opacity might strengthen the plausible effect of change on performance, make the effect uncertain of both anticipated actions and unanticipated actions that are induced by the anticipated ones (Hannan et al., 2007). Greve (1999) suggests that only a comparison of performance with competitors that experienced similar condition but without change can determine whether the effect is caused by change or by regression toward the mean.

This study agrees with Greve (1999), it will firstly attempt to gain access to the financial data of the competitors of the case organisation in the safety industry. Considering the research context of high speed economic development as well as the specialty of this industry, the change effect on the financial performance of the case company will be evaluated by the sales trends up or down, the increase rate prior and after change comparing with the average increase rates, further valid by national GDP increase rate (annual percentage growth in gross national domestic products) (Eisenhardt and Martin, 2000), as well as different environmental variations, i.e. the effect of periods of environmental stimulation on change and performance by disease explosion will be considered.

Furthermore, following the argument of Hannan *et al.*, (2007) that the immediate effect of change is usually a decline of performance, a proper test should collect time varied information (Sorensen, 2002). Previous research showed the short term change effect on

performance, but has not attended to the long term dynamic effects of performance variance. In order to fill this gap, one of the objectives of this study is to model financial performance measurement and trace the dynamic change effect. Historical time series financial information will be used. In this study, to test Propositions 3 and 4, the financial data of change effects and performance conditions from company documents will be used for four time periods: seven to twelve months before change, one to six months before change, one to six months after change, and seven to twelve months after change (Eisenhardt, 1989, Haveman, 1992). All change events are assessed over six-month periods between 1994 to 2009 lasting fifteen years. More discussion about performance measurement will be discussed in the analysis chapter of this study.

2.11 Organizational Age, Size and Change

In ecological change theories, several important variables need to be mentioned when examining organizational change. There are two competing theories regarding the relations between age, size, organizational change and mortality.

Considering organizational age, Stinchcombe (1965) offers four explanations for how change disrupts the routines and structures of young organisation, which he calls 'liabilities of newness', and claims that young firms are unlikely to change. Bruderl and Schussleer (1990) and Fichman and Levinthal(1991) argue that the 'hazard of mortality peaks not at founding but sometime later' (Hannan et al., 2007). Older firms should be more inert than young firms for changes. Carroll (1983) found the imprinting of old organisations leads to obsolescence if they cannot align well with the environment drift over time. Hannan and Freeman (1984) added that the changes in the older organisations which rebuild the internal system and external relations can be regarded as resetting the 'liability of newness' clock (Amburgey et al., 1993). Both the theory of liability of newness and theory of obsolescence are based on sensible empirical studies. Moreover, it is argued that if the population has consisted largely of small enterprises, then age dependence ought to appear positive roughly. As Martin Ruef (2000) argued the health care industry arose in the existing population but in the relatively uncrowded

regions. Sometimes, it does not fit the story very neatly.

Furthermore, Hannan and Freeman (1984) argued that small firms change more easily, and less easily as they grow larger, more bureaucratic and more inertial (Boeker, 1997). But a contrasting view holds that large companies control more resource to acquire additional human and physical capital, which enable them to initiate change. Greve (1999) argues that large firms will experience lower performance after change as result of high inertia but are less likely to fail because of their accumulated resources. Carroll and Hannan (2000) further explain that small organisations have little room to contract in size, and fail quickly once fortune declines.

Given these contradictory arguments, neither one is more specific than the other, also because of the research aims of this study and the unavailability of industry data, although they are important variables to organizational change, this study is unlikely to cover age and firm size as variables in this study.

2.12 Summary

There is a difference between strategy and ecological researchers on organizational change in the extent to which they adopt an adaptation or selection perspective (Gersick, 1994). For instance, those in the strategic adaptation camp emphasise the role that managers play in monitoring environmental changes and modifying strategy to better align the organizations with environmental contingencies (Child, 1972). For their part, ecologists emphasise the role that inertia pressures play, which make structural changes risky. This study views them as complementary. The literature reviewed in this chapter is on the leading edge of several current academic theories. Connecting managerial adaptation views and ecological disruptive theories is potentially rewarding. The discussion in this chapter seeks to integrate the literature of ecological inertia, the niche expansion model and managerial diversification theory, and also considers external environment factors. It considered a variety of distinct theory fragments, covering a number of important factors: modification routines, survival threshold of change, time

variance of change effect, the prior condition of firms, regression toward the mean etc. and expanded the implications for inertia theory.

This part of the literature review addressed organisational change and performance, formulated a research model, and refined the research question and propositions in order to achieve the research objectives. The author offered several propositions regarding organizational change and performance to directly test issues associated with the broader implication of inertia, the extent of change distances in niche expansion and diversification theory, and dynamic change consequences as well as pre-change conditions. The model also addressed the influences of the environment. The change process and its effect will be explored next.

CHAPTER THREE

ORGANIZATIONAL CHANGE PROCESSES

3.1 Introduction

The previous chapter discussed the theories regarding various change types, change levels and distances. This chapter addresses the process of change. Barnett and Carroll (1995) suggest that organizational researchers need to address both change content (what changes) and change process (how changes occur). Most researches examine only one of these two dimensions. There is a missing that theoretically motivated study to understand the process through which organizational change occurs, and to specify the different effects of change content and change process. Some scholars argue that internal organizational characteristics are important to consider when examining changes (Kelly and Amburgey, 1991). Others believe that ambidexterity and dynamic capability are one compelling theoretical way to gain insight into organizational change processes (O'Reilly and Tushman, 2008).

Moreover, it is argued that the operations of the organizational change processes are affected by highly complex social interactions (Jacobs et al., 2008, Edelman, 1992, Balogun and Johnson, 2005). During the change process, disruption is to be expected even at the time that the primary goal of a change is introduced. The consequences of change cannot be easily forecasted (Jacobs et al., 2008), search and adjustment processes are neither predictable nor manageable, and unintended outcomes may occur that undermine the organisation rather than strengthen it.

This second part of the literature review will consider recent developments in inertia

theory, specifically the potential disruptions associated with "cascading" changes, together with four related organizational characteristics - asperity, intricacy, opacity and viscosity - which mainly explain the uncertainty of change processes. The competing dynamic capabilities and ambidexterity theories will be simultaneously examined. Nevertheless, it is often considered that each organisation needs its own approach to organizational change; it varies by organisation. This point of view ignores the potential to use basic organizational theories to make predictions regarding the effect of change. In fact, "every theory of organisation contains an equilibrium prediction about optimal structure for a given set of technological and environmental conditions" (Barnett and Carroll, 1995: P220). These two approaches supply the potential opportunities to explain and forecast the effect of change processes.

3.2   Cascading Change and Organisational Intricacy, Viscosity

Structural changes often trigger further, unanticipated changes. Altering one organisational feature might induce many additional alterations, initiating cascading change. Recent elaboration of inertia theory claims that change process effects result from the length of time it takes to complete a transformation. The time to complete change depends in turn on the centrality and connectedness of the units in the organisation(Barnett and Freeman, 2001), which the ecologists call intricacy and viscosity (Hannan et al., 2007). Intricacy is defined as "a strong and complex pattern of interconnections among an organization's component units. Specifically, intricacy is the mean of the centralities of the units in the organization" (Hannan et al., 2007: P309). And viscosity is defined as " the expected time it takes for an organisational unit to respond to induced architectural code violations and bring local architecture into code conformity" (Hannan et al., 2007: P312). They are discussed in this section.

Generally, "a cascade can be characterized by (1) number of stages. (2) the number of units that experience induced violations during the cascade, and (3) its temporal character, including the time elapsed from origin to conclusion and the total time units spend reorganizing even if in parallel" (Hannan et al., 2007: P239). The unit which

experiences induced violation of new architecture code suffers pressure to respond in an effort to resolve it. Seeking to remove the code violation, the unit conducts rational search until it finds a simple adjustment that eliminates the code violation (Hannan et al., 2007). If the unit does not put in the effort to solve the problem, the cascade will not happen. When a unit decides to implement a set of changes for eliminating of code violations, it induces the second-order changes in other elements. The hidden codes provide another possible source of cascading. That means at any step a change might induce multiple branches in the cascade. Local adjustment might tend to undo these steps. However it is unlikely to trace back along the initial path.

The time it takes to complete the changes has strong implications for outcomes. In order to compare change processes of different organizations, three patterns of inter-unit connections have been introduced by Hannan et al. (2003b): flat hierarchy, vertical hierarchy and non-hierarchical model, as figure 3.1 shows below. The patterns of inter-unit relations shape the variety of cascades which relate the level of coupling among units to the likely pattern of cascades.
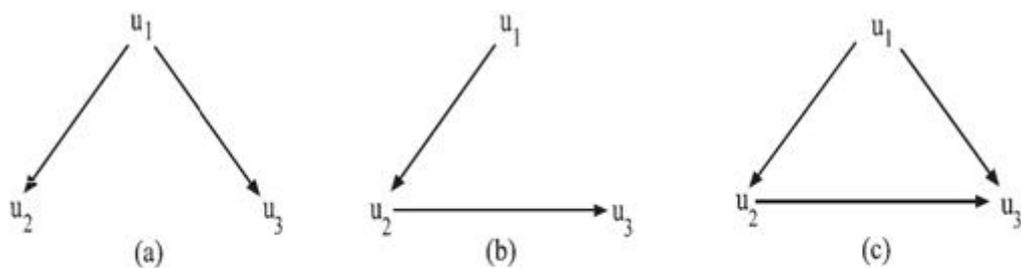
Figure:**3.1**   Illustration of three different patterns of connections among units. Source: Hannan, Pólos, and Carroll (2003b)

This framework makes it possible to predict certain characteristics of cascades, including the total time of transformation. Firstly, flat hierarchy (a) presents that unit one (U1) directly constrains unit two (U2) and unit three (U3) which are disconnected between them. U2 and U3 can independently solve the problem changing local architecture. Thus, the cascade is one stage, the temporal span of the cascade is the duration of the resolving code violations in the two units maximum. Secondly, pattern

(b) shows that if U1 constrains U2 directly and U3 indirectly, it is a vertical hierarchy model, which implies that U2 adjusts to the initial change, and U3 adjusts to the induced change by U2. Hence, the temporal span is the sum of duration of the unresolved code violations in the two units. Thirdly, the non-hierarchy case (c) unfold in two stages, U1 constrains U2 directly, but it constrains U3 both directly and indirectly. U3's reaction will last longer than other units generally. If U3 finishes changes induced by U1 before U2 does, it still has to adapt to the unfinished changes in U2, so the total time is greater. If U3 completes violation adjustment induced by U1 after U2 does, U3 will take additional adjustment induced by U2 when it reacts to U1 (Hannan et al., 2007). This complicates the total time of resolution. So these models indicate that the number of stages will increase both the total time of reorganisation and temporal span of a cascade, the complexity of the pattern of units' connection will make the time of reorganisation longer. Mintzberg et al.(1998) similarly argue that change cannot be managed in some orderly step by step process. Change solutions create further problem. In any change stage, the process could be ended by certain specific solutions, but these solutions are not those which are applied to the initial problems (Greiner, 1972).

Hannan et al. (2007) further examine centrality and change's inducement probability. They argue that the most central unit in flat model has lower centrality (depends on the units that it constrains) than the most central one in the vertical hierarchy pattern. Inducement probability examines that inducement of violation might or might not happen in a subordinate unit, according to the level of coupling in organization. Each organisation has one characteristic probability, which means the inducement probability would not vary over dyads within an organisation or over time for an organization. The point of the model is the expected number of induced violations in a known cascading change initiated by an architectural change in organization, presumably equal to the centrality score of that unit in one specific cascade (Hannan et al., 2007). The total duration of reorganisation is the sum of the durations of all units triggered in the process of reorganization. For a random cascade, the expected number of induced violations is presumably equal to the organization's intricacy (the mean of the centralities of its units) (Hannan et al., 2003a) the total expected time in a cascade equals the products of

intricacy and viscosity (Hannan et al., 2007). The organisational characteristics of intricacy and viscosity discussed here are the major criteria for the distinction of different type of organisational change, as we mentioned in the last chapter. Their effects on the change length and the effect of change length on change consequences will be empirically examined in this study. The time effect on change consequences will be discussed further in the next section relating to the cost and benefits of change processes.

3.3   Cost and Benefit of Change Process

Hannan et al., (2007) claim that architectural changes damage organisations if the cascades are long lasting. Because the changes divert the organizational members' attention, the tasks which generate revenue are interrupted by a reallocation of resources and reallocation of responsibility. The diversion results in the organisation missing opportunities during the change process, hence the changes must entail substantial opportunity cost. It is a complicated and dynamic trade-off between the 'right' change model and the cost associated with transition. 'The expected number of opportunities missed by an organisation during a cascade presumably increase with the total time spent reorganisation by its units during the cascade' (Hannan et al., 2007: P249), and this number grows with the viscosity and intricacy of the organisation.

The key implication of opportunity cost is related to the fitness and market position of the organisation. If it fails to capitalise on an opportunity, while its competitors do, the organisation's performance and level of fitness will decrease. So the more time that is spent on reorganisation, the less fit an organisation can expect to be (Hannan et al., 2007). The more opportunities missed, the higher the cost of the process, and the lower the level of efficiency and performance (Nee and Su, 1990). However, Burgelman (1991) argues that the opportunities should be categorised by whether they could leverage existing assets or not in an organisation. Baron *et al.* (2001) suggest that it might be preferable to stick to first-best model or models, and make any necessary adaptation rapidly within or among those models, in order to balance stability versus change.

3.4 Organisational Opacity and Asperity

Following the discussion of reorganisation process, the impacts of another two organisational conditions - opacity and asperity - are examined in this section. Opacity means limited foresight and also can be explained by the general notion of bounded rationality (March and Simon, 1958). A more precise definition is 'one component of organisation is structurally opaque to another if the inter-unit connections that flow from the former cannot be readily seen by the latter' (Hannan et al., 2007: P257). That is to say, organizations might miscalculate the cost and risks of change due to the limited foresight about the exact structure of internal units connections. Such miscalculation may make them promote change where the costs are much higher than the expected benefits. This could possibly explain why organizations spend a long time bearing much risk and missing opportunities, work for changes. Williamson (1975) comments that information in some parts of organisation is often unavailable, and the manager's perceptions of resources is hampered by communication. It makes it difficult for the manager to fully interpret conditions outside the unit (Jacobs et al., 2008). Moreover the organisation is constantly barraged by external information as well, as the managers develop information filters when they become stabilizers and less ambiguous (Henderson and Clark, 1990) to identify which is most crucial for their information stream. Stinchcombe (1990) further claims that local knowledge and culture might amplify the limited foresight.

As we discussed before, the relative inertia concept suggests that change should have different consequences under different external conditions (Singh, House et al., 1986). Delacroix and Swaminathan (1991) suggest that the magnitude of environmental variation is correlated with the likelihood of organization's making a change. This interaction is important because it reveals the internal mechanisms through which firms interpret and respond to external context. Thus, this study examines organisational opacity as a limited foresight about the exact structure of internal units connections, reacting to both internal and external features. Those internal and external features

include the pattern of induced violations among upper levels of inter-units connection in one cascade, and include the possibility of miscalculations in the cost of risks of change in the internal processes of responding to developments in the environment (Dobrev, Tai-Young et al., 2003).

Hannan et al., (2007) argue that the expected number of foreseen induced violation increases with the centrality of the initiating unit. The implication for opacity is that the expected number of induced violations in a cascade that are unforeseen presumably equals the level of opacity (the difference between the actual intricacy and foreseeable intricacy) of unit/organization. The fact that the unforeseen code violations show up in the middle of the change process slows adjustment. As the change process proceeds, the organisational members start to learn and reflect upon the unfolding change events, and new practical rules and structural changes which were once considered unproblematic can become infused with moral values (Jacobs et al., 2008). Two main reasons that opacity increases the time required and extends the period of reorganisation are summarized here: 1.) the initiator of change cannot estimate a priori all the adjustment required in an opaque organization. 2.) Not all the changes can be planned and implemented in parallel, because the induced violations arise randomly. Only when a part of the units in a cascade finish the adjustment can the subunit begin to react to these changes.

The other important dimension of the structural model of changes is related to the cultural position of the organization. Changes and new managerial practices which break the codes generally encounter cultural opposition, which generates turmoil and lengthens the reorganisation period (Hannan et al., 2007). This leads to more severe misalignments with the environment (Jacobs et al., 2008). As we discussed in previous section, when the architectural features are infused with moral values, the cultural opposition is evaluated by the organisation initiating change in a cost-benefit calculation and a normative matter. The implicit organisational culture governs cooperation and decision making in an often unpredictable environment (Hatch and Schultz, 2002, Ravasi and Schultz, 2006). The level of the restrictive architecture schema (the grade of

membership in an consensus about the rules that apply to the unit) excludes many architectural possibilities, it is defined as asperity (Hannan et al., 2007).

Another definition of asperity is that the degree of culture consensus is the average among its members of the grades of membership in the consensus about the architectural schemata (Hannan et al., 2007). The greater culture homogeneity generates higher cultural asperity of one unit, and a higher average degree of restrictiveness in member's schemata. A unit whose membership represents a homogeneous culture for the architecture rules operates effectively presumably, whereas the unit lacks cultural consensus would seem to be dysfunctional.

The possibility that an architectural change suffers cultural resistance, equals to the cultural asperity of that unit (Hannan et al., 2007). Asperity generates resistance for three reasons. First, the intense moral reaction caused by a cultural violation makes individuals fight longer and harder. Second, the resolution may not focus on culture matters since cultural opposition might not be easily recognizable. Third, because of extensively broad resistance, the implementation of change will require more direct managerial control in order to seek more supporters within limited managerial time. Another, as we have mentioned, the inertial forces of organisational culture in previous section (Hannan and Freeman, 1984), since culture is strongly influenced by prior experiences and reflects the imprinting of the firms' early history; once it has been established and take for granted, it is difficult to change the basic assumption (Stinchcombe, 1965). It definitely slows adjustment and lengthens the time of reorganization.

3.4.1 Organizational Culture and Change

From a managerial perspective, the definition which is well accepted for organizational culture is that 'a set of norms and values that are widely shared and strongly held throughout the organisation' (O'Reilly and Chatman, 1996: P166). Hofstede *et al.*, (1990) find that the differences among organizational cultures can be described by focusing on

very few dimensions. Two key dimensions are: 'the extent to which the culture is employee oriented vs. job oriented and whether it is process or result oriented' (Hofstede et al., 1990: P286). The implication here is that the study of culture can focus on practices, i.e. behaviour and performance, rather than values (Clement, 1994).

Researchers claim that a strong corporate culture facilitates internal consistency and improves firm performance (Sorensen, 2002). It does so by enhancing coordination and control within the firm, improving goal alignment between firm and members, and increasing employee effort. However, a strong culture can be costly in a volatile environment. In volatile environments, the reliability benefits of a strong culture disappear because incremental adjustment is not sufficient. As we mentioned before, in volatile environments most organisations will be required to undergo discontinuous or frame-breaking change (Balogun and Hailey, 2004). The benefits of strong culture in organizations will lessen under the changing external environment. This variance will attenuate if environmental volatility increases. Successful change depends on the ability to discover alternative routines and requires exploration (March, 1991). Strong culture firms generally are ill suited to exploration for three reasons: 1.) Greater difficulty to recognise the need for change, harder to handle the changes outside the existing interpretive framework, and slower to detect a fundamental change in environment (Lant and Mezias, 1992). 2.) Strong culture firms facilitate first order learning, and impede second order learning (meaning that firms learn from individuals – one exploratory learning of which is the 'presence of individuals whose beliefs contradict the organizational dominant beliefs') (Sorensen, 2002: P76). 3.) Innovation is fostered by a viable counterculture; strong culture firms are less likely to generate a counterculture. Even when it can be obtained, it is harder to transfer to the domain culture (Martin and Siehl, 1983, Tushman and O'Reilly, 1997). Hence, strong culture firms may seek a trade off with respect to the abilities of adaptive and exploration.

Moreover, Chinese cultural characteristics are a dimension of the research context that may influence the change decision and process. It is claimed that Eastern firms care greatly about the feelings of staff, especially friends or family members in the company.

As part of the general organizational culture, people are cared for in the management of many business organisations in China, and their interpersonal relations are correspondingly complex (Li, 2007, Lin, 2005, Lu, 2007, Zhong, 2007). It is also the root cause of many other Chinese culture characteristics, i.e. Guan Xi, Renqing, gift giving, and networking in organisations. It enhances the complexity of organizational change. It might lead to either more severe resistance or much less, compared to the companies in Western countries. On one hand, considering the interpersonal relations, the managers might give up trying to implement change when experiencing resistance from their friends or relations. On the other hand, Chinese culture might lead to less resistance, less disruption in the change process compared to the companies in Western countries, as people usually show more respect to the superior in the hierarchy in the business organisation, and so shorten the change process. However, managers usually think that no change means development is withdrawn leading to a lack of competitive edge based on the high speed of economic development in China. Thus it can be concluded that there is no obvious difference as a result of the influence of Chinese culture; it will therefore be considered but will not taken as a variable in this study.

Overall, organisational culture helps us to better understand the cost and benefits of the change process. Cultural asperity increases resistance to organizational change, lengthens the re-organizational process and reduces potential gain from the new organizational activities. Based on the above discussions, Proposition 5 of the effect of change process is as follows:

Proposition 5: The length of the change process negatively affects the change consequences on performance. Four organizational characteristics - intricacy, viscosity, opacity and asperity - extend the length of the organizational change process.

The above sections mainly discuss the negative effect of the change process as seen from an ecological view. In next section, the possibility of a positive impact of the change process from an adaptation view will be explored.

3.5 Ambidexterity

Theories about ambidexterity and dynamic capability offer more optimistic views of organizational changes processes (O'Reilly and Tushman, 2008).

Beyond the argument of whether an organisation can adapt or not, the strategists offer two related concepts. One is dynamic capabilities (Eisenhardt and Martin, 2000, Teece et al., 1997), which refer to the ability of an organisation to reconfigure its assets and existing capabilities to adapt to external variation. It emphasises the role of senior managers seizing opportunities by integrating new and current resources to overcome inertia. The strategic way that leaders think generates all the strategic means of analysing the external environment, creating vision, developing core competency and leading strategic change. Teece (2006: P38) argues that the key to sustained profitable performance is 'the ability to recombine and reconfigure assets and organizational structure as markets and technological change'. Both the works of Zott (2003) and Adner and Helfat (2003) provide the evidence that even small differences in the dynamic capability of firms could account for different performances.

The other concept which strategists suggest is ambidexterity, or the ability to simultaneously explore and exploit which enables firm to adapt over time. Ambidexterity acts as a kind of dynamic capability, combining the routines, processes and skills required for exploitation and exploration. Ambidexterity is also labelled by much literature as a structural characteristic (He and Wong, 2004). More specifically, ambidextrous organisations try to both nurture and refine the assets as contexts shift based on the current operating routine and to seek to modify routines to secure a long-term competitiveness (Teece et al., 1997, Macpherson et al., 2004, Gulati et al., 2002, Adner and Helfat, 2003). The theory claims that efficiency and flexibility, or exploitation and exploration do not have to be trade-offs in the change process.

These notions of abilities lie at the core of adaptive processes. Ambidextrous organizations "exploit existing assets and positions in a profit producing way and

simultaneously to explore new technologies and markets, to configure and reconfigure organizational resources to capture existing as well as new opportunities" (O'Reilly and Tushman, 2008: P189). This section will seek to discuss the possibility of simultaneously achieving exploration and exploitation in the change process. Organisations that only specialise in exploitation will become dominant in the short term but gradually become obsolescent. Those with greater exploration ability face more uncertain upsides and might have threats to existing organizational units, but have higher expected payoffs.

Nevertheless, Winter (2000) argues that the ambiguity in the terminology of this kind of capability is 'terminology haze', and is of little help to our understanding of organizational change (Eisenhardt and Martin, 2000). Unless made specific, these capabilities remain vague. Gulati *et al.*, (2002) identify some specific examples of dynamic capabilities including new product development, alliances, joint venture and cross line of innovation, which all aim at sensing and seizing new opportunities. For the capability required for ambidexterity, a coherent alignment of competencies, structure and culture to engage in exploration, exploitation and leadership flexibility are required (Teece, 2006). It is suggested that separating aligned organizational architectures, i.e. business model, incentives, culture, and separating explore and exploit subunits, then targeting integration. It would be helpful to achieve ambidexterity and positive organizational performance, and make it possible to achieve both exploration and exploitation simultaneously.

Moreover, some evidence shows that under certain conditions, organisations are able to exploit existing assets while exploring new areas, demonstrating both efficiency and flexibility in the process, i.e. if they engage in 'rigorous continuous improvement' while also creating 'meta routines—the routines used to change other routines' (O'Reilly and Tushman, 2008: P191). The balance should be dependent on the speed and the type of organizational change confronted, which is consistent with the proposition generated earlier in this study. It is suggested that the organisation has separately aligned organizational architecture for 'explore' and 'exploit' subunits and then target

integration. Further, it is pointed out that the problem normally in the change process is not separating the structural change decision into a exploration and a exploitation subunits, but is the integration in a value-enhancing way (Teece, 2006). It is acknowledged that it is difficult to obtain this fit, but if the organisation does succeed in achieving it, their source of success will also create a 'success syndrome' (Tushman and O'Reilly, 1997) and 'the paradox of success' (Audia et al., 2000) from strategies, structures, culture and people.

However, some theorists argue and have supplied evidence that firms attempting to achieve both exploration and exploitation perform worse than those with a single focused strategy -- they became organisations stuck in the middle. Whether exploitation and exploration should be done simultaneously or sequentially has not been made clear. The costs of developing ambidexterity need to be compared to the corresponding benefits, which is also consistent with the ecological argument for organizational processes. O'Reilly and Tushman (2008) comment that overall ambidexterity underlines the variation–selection–retention logic and is a deliberate approach to it. Again, selection and adaption can be complementary instead of mutually exclusive. One view is not absolutely correct under all circumstances. Hence, as we mentioned earlier, this study will not assume one is superior to the other; the possibility of either a positive or negative effect of change process will be tested here. The corresponding proposition is concluded as follows:

Proposition 6: The ambidexterity (the capability of simultaneously achieving exploration and exploitation) is possible in the organisational change process.

3.6 Summary

In order to examine the change processes' effects, this chapter discussed the cascading change process, highlighting four parameters of the framework: organizational asperity, opacity, intricacy, and viscosity. It simultaneously explored the interpretation of dynamic capabilities and ambidexterity, as well as organizational culture, from a

managerial perspective. These two theoretical camps regarding the change processes are not mutually exclusive. They both provide insight into the organizational change process and possible consequences, and give support to each other to a certain degree. Thus this theoretical explanation offers a possibility that the analysis of this study may best match a combination of these two theoretical views. Some elements in change process are interpreted better by one view over the other under certain condition.

CHAPTER FOUR

RESEARCH METHODOLOGY AND APPROACH

Based on the literature review, this chapter develops the research design, explains the research methods for data collection and analysis, and summarises some critical issues to be resolved in operationalisation. The ethical issues are identified and the limitations are noted.

4.1   Research Philosophy and Strategic Design

The extent of scientific rigor in a research study depends on how carefully the proper research design has been chosen, and should reflect clear philosophical awareness (Saunders et al., 2003).

Research questions should drive the method. As the goal of this project is to gain deep insight into organizational change phenomena in both content and process, and to investigate dynamic performance before and after change events, the research question is consequently generated in a "how" and "why" format. However the propositions are formulated from rival theories in statement format instead of sub-questions. As we clarified in the previous chapter, the propositions are derived from very few empirical studies; also, because there has been no prior research on this industry, this is a path finding exploratory study. The author uses propositions to give more theoretical structural to the discussion, to make this exploratory process more rigorous, objective and precise, and to improve the predictive power of change theories in a specific context - safety and filtration industry in China, with less emphasis on the need to generalize.

This approach is similar to previous phenomenological studies such as those in which human experiences and social realities are involved through detailed descriptions of the phenomena under review. Such an approach tries to historically locate interpretation of the social life-world (Crotty, 2004, Saunders et al., 2007, Creswell, 1994). It is claimed that the interpretivism approach is derived from the property of a setting and its actor's views of them (Saunders et al., 2007). In this study, the views of the persons who were involved in the change processes will be central sources of information. It is also recognised that interpretivism rests more on the interpretation of the researcher rather than the view of participants and the subject of research (Bryman and Bell, 2003). Taking this into consideration, this thesis is based on the participants' point of view regarding the evaluation of organizational change processes and consequences. The author will ask a third party to co-interpret the interpretations from the informants/participants who experienced the change events. Furthermore, positivism deals with facts, this study also gives great consideration to objectiveness and reliability, and historical financial documentation will be traced for over 15 years. It will be illuminated in detail later in this chapter.

An interpretivist approach also calls for an inductive strategy. It is useful to think of the nature of the relationship between theory and research; whether theory guides research or whether research leads theory. It is commented that organizational change theory has much space to be improved and the relationship between large parts of theory fragments have remained unexamined (Hannan et al., 2007). Stonehouse *et al.* (2002) point out that theories of strategic management have far to go to reach maturity. However, theory guidance is clearly the base of any research, and the literature review identifies answers from previous studies, which help to refine sharper and insightful research questions (Yin, 2009). But as the nature of this study determines, it is necessary to obtain as much information as possible from branches of the case organisation, to understand within the research context of the safety and filtration industry in China, how and why the different types and extents of organizational changes work. Thus, the character of this study - whether it is deductive or inductive - will not be clearly distinguished. It is supported by

Sekaran (2003: P31) that to a large extent, deductive and inductive strategies are possibly better thought of as tendencies rather than as hard and fast distinctions; the issues are not as clear cut as they are sometimes presented.

4.2 Qualitative Approach

The aims and research questions of this study have shaped the data collection plan (Yin, 2009). The methodologically difficult issue of demonstration empirically demonstrating the organisational change process calls for in-depth and relatively fine-grained methods (Singh et al., 1986). "The qualitative is highly appropriate in studying process because depicting process requires detailed description; the experience of process typically varies for different people; process is fluid and dynamic; and participants perceptions are a key process consideration" (Patton, 1990: P95). Qualitative methods can allow the researcher to gain insight into organisational change, understand complex processes, discover relationships between change and consequences, and identify the influence of the external context. The main strength is the depth and amount of detailed information it generates. It can better deal with the difficulties and information associated with organisational changes, and is as the most appropriate method for analysis of complex change cases and for giving a holistic picture (Cassell and Symon, 1994, Marshall and Rossman, 1989). In fact, most studies in organisational strategy and management have applied a qualitative approach. The work of Gioia & Chittipeddi (1991) is an exemplar of qualitative research on strategic change drawn from management field (Shah and Corley, 2006). By contrast, a quantitative approach does not enable the researcher to obtain unexpected information and explore unanticipated avenues (Blumberg et al., 2005). Quantitative techniques like questionnaires are not appropriate if the study deals with social processes and historical changes (Pettigrew et al., 1992).

However, the qualitative approach is not problem free. It is proposed that both approaches can lead to valid results and rely on each other (Hyde, 2000). Probably ideally research could combine both qualitative and quantitative approaches. Except the

reasons we mentioned above, quantitative survey is not adopted in this study for two reasons. Because one of the main concerns of this study is the effect of organisational characteristics and external conditions on change process, instead of an individual's attitude or opinion on changes, these characteristics are more likely to be drawn from interviews. More information from an employee's expression and tendency can be gathered in the interview process, and can enhance the accuracy of the findings. Another, there are no pre-established benchmarks for measuring performance (e.g. the financial performance will increase 5% after change). The outcome of change can be compared with the benchmark, which can be assessed by a survey. This means that the financial performance before and after change must be assessed by the informants in combination with the financial data from the case company.

4.3 Case Study Research

The majority of organizational studies are case studies and use company records and interviews to construct a rich picture (Greiner, 1972). Case study research has a long history in social sciences and business management, and it is associated with the phenomenological paradigm (Silverman, 1993). As mentioned earlier, the empirical demonstration of the change process is methodologically challenging, and relatively more fine-grained methods, such as a case study, are appropriate for research on the consequences of the change processes and contents (Singh et al., 1986).

Generally, there are three traditional research strategies for real world social research: experiment, survey and case study (Robson, 1993). Experiment is usually used to measure the effects of manipulation, where the investigator can manipulate a variable directly. But even if it were possible to manipulate one variable to observe the impact on another, some of the other confounding variables could not be controlled for (Sekaran, 2003: P150). As one of the objectives of this study is to examine the consequences of different change types and change processes in real scenarios, it is impossible to control the variables at the strategic level of the organisation. Secondly, survey research risks superficiality, and its reliability is in doubt if it relies on

respondents from a few organisations. Compared to survey and experiment, the bias of the case study approach is more frequently encountered but less frequently overcome, and perhaps lacking in rigor.

Many social scientists also still believe that case study is only suitable for exploratory research, not for proposition testing or description; whereas survey is appropriate for the descriptive stage of investigation, and experiment is the way of explanatory studies. However, this hierarchical view of methods needs to be questioned. For example, exploratory experiments always exist, and some famous case studies are explanatory (Yin, 2009), which demonstrates the explanatory function of a single case investigation, not just its descriptive or exploratory nature. Yin (2009) proposes a pluralistic view that every research method can be used for all three purposes: exploratory, descriptive and explanatory.

It is suggested that the research strategy is decided not according to the hierarchy view but three conditions as below. It is recommended that the case study methods are preferred when ' 1.) "how" and "why" questions are being proposed, 2.) the investigator has little control over events, and 3.) the focus is on a contemporary phenomenon within a real-life context', especially where the boundaries between phenomenon and context are not clearly evident (Yin, 2009). This study coincides with all three conditions, to empirically examine how and why contemporary organizational changes have influence on, and lead to various performances, in a real organisation. The research does not have complete control over events. The case study design is also proper because the 'how and why' research questions in this study are to be dealt with by tracing them over time, and are less likely to depend on a survey.

Additionally, the case study is to make use of the full variety of evidence covering company documents, archival files, interviews and observation. The task is to build up a comprehensive picture from such varied elements (Gillham, 2005, Yin, 2009), so as to gain the fullest depth of understanding and improve validity (Yin, 1994). The research question of this study asks an extensive and in depth description of change phenomenon,

and multiple levels of analysis for organizational change, combining change events at the sub-units level and organizational characteristics at the organizational level. The case study thus allows the researcher to retain the holistic and meaningful elements from real life (Yin, 2009).

Grunbaum (2007) claims that the case study approach is proper 'as long as it is not static by nature and as long as it cannot be characterised as an experiment, a survey, or a historic study'. Eisenhardt, cited in Grunbaum (2007), explains that the case study focuses on understanding the dynamic present within single settings. It is shown that the objects of case studies are usually strategic decisions, organizational structures, functions, processes, and organizational performance. Pitt (2005) recommends using a general model in a particular case and examining each posited link critically in order to understand better how the organisation actually functions. Following the above advice, this study explores the various change contents and change processes, dynamic changing performance within a single setting of the safety and filtration industry using a case study research approach. The possible bias which might be encountered will be considered and included in the discussion of the remaining sections in this chapter.

Ultimately, this research can be considered an interpretivism epistemology nature by qualitative approach through in depth case study and associated data collection methods such as interviews, observation and documentation[12]. In addition, considering the research context is a specific industry within a specific country, the study might also make a different contribution. As it is unlikely to find a similar work examining organizational changes in China, this study could also be considered an exploratory work within this context.

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[12] The details discussion of methods - interview, observation and documentation - will be presented later in this chapter.

4.4   Study Design and Units of Analysis

The study design logically connects the empirical data to the research questions, and ultimately to the study's conclusions. It guides the researchers to collect, analyse and interpret the data, and consequently draw inferences concerning the causal relationship among variables (Yin, 2009). It is suggested that there are five important steps in a research design: 1) the research questions; 2) its propositions; 3) its units of analysis; 4) the logic linkage between the data and the propositions; 5) the criteria for interpreting the data.

During the literature review, the focus of this study was narrowed down to this research question "How and why do organizational changes lead to different consequences for performance?" Six propositions have been proposed. Some studies with similar topics in other research settings provide support to the research questions and suggest the way to investigate them. The unit of analysis in this study will be discussed next. The fourth and fifth steps of research design as suggested by Yin (2009) as above-mentioned will be discussed in the data analysis section of this chapter.

The unit of analysis can be identified by the research question and propositions of this study. The main unit of analysis should be organizational change phenomena and connected with organizational characteristics and performance. In this study, the case organisation is in the safety and filtration industry in China. Analysing change events and solving the problems in the process of change for the case organisation is also the motivation for this work; the research was funded by the case organisation. Hence the change events in three branches of the case organisation will be the major units for exploring various change phenomena since the time of the organisational founding. The rationale of using a single case will be discussed in the next section. Although change events are at the sub-organizational level, and the organizational characteristics and performance are analysed at the organizational level, it is still true that the definition of the unit of analysis is the same as the definition of the 'case' (Yin, 2009). The embedded units – change events – in this study have parallel functions to organizational

characteristics and so implicate an organisational level. For instance, ecological theories of organisational change examine the subunit levels of the organisation, and implicate the organizational level (Hannan et al., 2007). This kind of research design is named by Yin (2009) as a single case embedded design. It aims to understand organisational change by collecting in depth information from few or a single case organisations but with embedded units/cases. Using multiple subunits makes it possible for replication logic in this study. The embedded design is at two levels: 1) change events; 2) organizational characteristics and performance. The environmental variation surrounding the units forms the contextual elements.

4.4.1 The Rationale of Single Case Embedded Design

This study employs single case with embedded analysis cases. Yin (2009) argues that a single case is appropriate if the conditions apply to five rationales. The first rationale is when a single case represents a critical case to test a well formulated theory, can confirm, challenge or extend the theory, and demonstrate whether the proposition is correct or an alternative explanation is more relevant. The second rationale is that the case is unique or extreme case which is worth documenting and analyzing. Thirdly, the case is a representative or typical one. Fourth and fifth rationales are the case can be either revelatory or longitudinal respectively.

In this study, a single case embedded design is reasonable because of several reasons. First, it complies with the first rationale to be as single case design, because that it considers the major arguments in organisational change studies wherever applicable relating with the focused concepts in this study. It examines the rival theoretical discussion and two models from both organisational adaptation and selection theories. This study tests under what condition, the propositions can be better explained and supported by one theory than the others. It does not assume each one alone can explain all the change situations. Thus, for instance, both proposition 5 and proposition 6 examine the effect of change processes but from different angles and each from one school. Although the organisational change study is well formulated before in Western

countries, we see only few empirical studies of issues with which this study is concerned. Hence, this study takes the model by considering both, to put in a unique under studied context to empirically examine whether it can be extended to this situation.

Second, the case organisation is in the safety and filtration[13] industry in China. This industry only emerged in the last 25 years or so in China and has not been studied by previous organisational researchers. The case organisation was founded almost at the same time the industry emerged, and it is also in the first generation of private enterprises after the Open Door Policy was introduced in 1978 in China. Since 1978, government macroeconomic intervention and control have been implemented eight times, leading to a large number of bankruptcies each time. The first law to protect and support private enterprises was only set up in 2002 (Center, 2007). The business environment and policies are very unstable and the average mortality rate of SME (small and medium enterprises) is 45%-65% within five years after their founding, 85% within 10 years, and the average age of SMEs is only 3 years (Chen, 2008). The case company has made dramatic internal changes in reaction to the changing external political regulations, economic recession and disease explosion[14]. This provides the researcher with a number of change events as good empirical resources from both prior history and current conditions, to make a critical test of change theory. Taking account of the above reasons, this single case organisation can be said to be both unique and typical for investigating organisational change and its consequences for performance. It thus accords with the second and third rationales.

Thirdly, as the events in this study cover fifteen years, and the financial data of case organization are traced back to 1994, the event-history and time continuous techniques are adopted in this study[15]. This study could be therefore regarded as a longitudinal one and comply with the fifth rationale. Another, the author of this study worked in this case

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[13] The definition of safety and filtration industry is explained in this chapter later. Why to choose safety and filtration industry is explained in introduction chapter and in the section later of this chapter.
[14] Why the disease explosion is relevant will be discussed later in this chapter.
[15] The event-history and time continuous techniques are discussed in next section.

organization for eight years; previous working experience is very helpful for data collection and for improving reliability.

Moreover, the embedded analysis can avoid attending to data on an unduly abstract level, focusing instead on each change event covering a long period of time. This makes it possible to supply a clear insight into comparable change processes between change events. The logic of replication can be attained by comparing the results from similar types of change pairs. If the findings from change events turn out as predicted, it can provide strong support to the initial propositions in this study.

Additionally, a single researcher is unlikely to adopt multiple cases with embedded designs because the time and extensive resources required go beyond the means of an independent student (Yin, 2009). The result of a pilot study shows that direct replication of paired case organizations is unlikely to be achieved[16] in this work. Due to all of above reasons, overall, the single case embedded design is appropriate and is adopted in this study.

4.4.2 Historical Events and Time Continuous Technique

Organizational change studies require historical information. Historical information about organizational change is strongly suggested by previous researchers (Amburgey et al., 1993). If information about previous organizational changes has not been considered, or if the only focus is on the external environment or contemporary information, the research would supply a misleading and incomplete picture. An event-history approach records the data containing information on the timing, numbers and consequences of significant actions and changes in the organisation from the founding to the end of observation period (Tuma and Hannan, 1979, Kelly and Amburgey, 1991). Event-history methods are appropriate for the study of discrete state, time-continuous change processes, and it is helpful to distinguish the consequences of change content and change process by a fine grain approach (Kelly & Amburgey, 1991;

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[16] The results of pilot study are shown in the pilot study section of this chapter.

Tuma & Hannan, 1984). Since exploration of the change process is one of the aims of the study, as we mentioned earlier, and since the case design is a fine grain approach, event history is appropriate to be used here. Furthermore, a multivariate point process model is proper for 'situations where discrete point events occur in one dimensional continuum, usually time' (Amburgey et al., 1993: P62). If multiple, repeatable events need to be examined, like organizational change, a multivariate point process model defines each type of event separately as a 'marginal process' compared to whole processes.

Moreover, it is strongly suggested that since the processes of changes and performance are unlikely in equilibrium, a dynamic approach to examine the impact of the timing and type of changes on performance in an organisation is more proper than a cross sectional approach, which implicitly assumes temporal equilibrium (Tuma and Hannan, 1984). Following this advice, the goal of this study is to model the impact of multiple changes at different points of time, instead of considering a single spells and the author breaks the event history into some major change events which each involve some multi-level changes and represent that historical period[17]. Each marginal process of major change case is to be defined[18], however the change process during the cascading change might not be clear cut. Eventually it is possible to combine the whole time series of an organisation's change history. The company information of change events and financial data of the organisation are complete and accessible, which benefits this study.

Previous theoretical work and methodological discussions claim that tracing changes over time is the major strength of a case study (Yin, 2009). The time series technique is the match between theoretical significant trends and the empirical trends. This means one should examine the financial data before and after the change events compared to the market trends or industry average data, especially the performance might have some decline followed by some rise in the same change, the time series can strengthen the analysis and is of value by generating a rich explanation for the complex outcome of

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[17] The change events selection will be discussed in a later section of this chapter.
[18] The operationalisation design on how to measure the time of change events is explained in data analysis chapter.

change events (Greve, 1998). This study measures performance of each change event at four points: pre-change performance is assessed twice, and after change condition are approached twice. The proposition for performance measurement of this study are tested continuously (Ocasio, 1994).

4.5 Pilot Study

The objective of the pilot study of this research was to help to develop the relevant line of questions, and refine the data collection design with respect to both content of the data and the procedure to be followed (Blumberg et al., 2005, Yin, 2009). The pilot study was conducted by adopting face to face interviews, limited looks at documentations and a one- month company observation. The interviews were with five persons including the vice general manager of case organization, who is one of the decision makers, two department middle managers, and two office staff who all had experience with prior change events.

The results of the pilot study provide considerable insight into the basic issue being studied and show several important implications. Firstly, the pilot study was done before the selection of any specific change events for this research, some change events that interviewee informants talked were not qualified enough, which make it clear that choosing change cases before formal field work is initiated, is extremely important. A general view of the vital change events emerged during the pilot process. The typical change events in this study were deliberately selected[19], and cover the entire history of the case organization. The change events selection process was iterative, and the author further conducted a simplified inquiry regarding the various levels of niche expansion which was to be examined in this research in order to cover major types of niche expansions. Discussion of this will be supplied in the next chapter.

Secondly, from the results of the pilot study, it became apparent that some interview

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[19] The change case selection is discussed in one separate section of this chapter.

questions needed to be more concrete[20], and also needed to be slightly shorter, and divided into several questions. Moreover, data validity was also considered in the pilot stage, due to some theory terms and translation issues, some informants were re-chosen randomly during the pilot study process. More informants were chosen randomly during the pilot stage to test this issue. The author also decided to send out the interview question list two days before the formal interviews. More details of which will follow in the interview section and in the operationalized design section of next chapter. Furthermore, problems can be addressed by selecting the change events before the formal field work commences, as the informants can choose the change events from the list which they experienced and are familiar with. And the informal chatting is very helpful during the observation period.

Thirdly, because informants have a busy schedule, and the interviews were excessively long during the pilot stage, the interviews had to be interrupted sometimes. This suggested that maybe interviews with key informants should be conducted twice. A relaxed non-work environment is important for encouraging interviewees to supply and recall more detailed information. Thus, appointments were booked with all possible interviewees in advance as soon as the pilot study finished. The time and places are supplied with flexible choices.

Fourthly, the author was aware that the single case is potentially vulnerable. Initially the author first intended to conduct comparison case studies, and tried to contact two other organizations during the pilot stage. Ultimately, it was not possible to study and make a direct replication. Firstly because although two targeted pair organizations agreed to be investigated, they are competitors in this industry. Organisational change is a strategic organizational decision, which makes managers unlikely to speak frankly about detailed company information. In addition, direct observation is limited. Part of their core facilities which contain the core technologies can not be visited, no matter if you are customers, suppliers, competitors or researchers. Conversations regarding how the core technological improved and products developed could not occur. Fully accessing the

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[20] More is discussed in interview section.

files was also unlikely to be achieved and the available financial data was very limited. Especially since the records of change processes would be spread over all possible company's sources, it was impossible to collect systematic data to make full comparisons between organizations. Although partial information about change can be obtained from interviews, the construct validity is in doubt, preventing the aims of this study from being achieved.

The difficulties of gaining access to organizations have been fully recognized by previous organizational researchers, due to the issue of sensitive topics and the risk of disclosure. When researchers require large amounts of time to ask vague questions, they need to be flexible enough to cope with rebuffs (Miller, 1997). On account of the above, the author switched to the plan of single case embedded design.

Overall, the data from pilot study yielded a lot of information regarding the major change events. Part of the results are included in the analysis chapter. Eventually a satisfactory data collection procedure was developed for the formal field work. In next section of this chapter, in order to gain an impression to the research context, the industry, case organization and change events selection are discussed in a condensed form.

4.6 The Safety and Filtration Industry in China

It is useful to understand the background of the safety and filtration industry as well as the situation of Chinese economic development, as context for this study. First, the safety and filtration industry is not sharply defined. It emerged about 25 years ago from existing industries such as the hardware industry, medical industry and protective industry. It is named as the safety and filtration industry in this study according to the Canton Fair's classification which is a prominent national product exhibition and was existed for over 100 years. It was also referenced from the classification of several famous international professional exhibitions, such as A+A safety fair, Dusseldorf, Germany; NSC Congress and Expo, USA; Safety and Health Expo NEC, Birmingham,

United Kingdom; Filtech Wiesbaden,Germany; MEDICA, Dusseldorf, Germany; and INDEX 11 Geneva Palexpo, Switzerland; and Safety in Action 2010, Melbourne Materials Handling. It was also driven from various functional and markets value, such as the air filtration industry, air purifying industry, health care industry and textile industry. This research could not rely on standard industry classifications and use data organised at that level, and was also unlikely to be able to access Chinese census data. The main products of this industry are non-woven filter materials, filter bags, pleated filter packs, personal protective equipment such as disposable dust masks, protective coveralls, safety vests etc.; as well as medical protective products, i.e. vinyl gloves, disposable surgery isolation gowns.

Hannan *et al.* (2007) comment that researchers should not rely so heavily on industry directories and the like. Considering all the above classification and views, this study uses the term 'safety and filtration industry', as this view most covers the major functions and market values of the main products, and is consistent with the categories used by the primary international exhibitions. In this study, industry background is regarded as part of the research context rather than as a research target. As the macro level industrial data is unavailable, and also because the fine grained in-depth qualitative approach is to be adopted, the industry classification will not have any direct influence relating to the validity of primary data collection, data analysis and results. Barnett and Carroll (1995) support that most of the new surging stream of research on organizational change arises from analysis of a particular industry or specific institutional context, which focus on organizational phenomenon exploration and consequence evaluation itself. One main product is clarified in detail next.

Non–woven filter fabric is one of the main products and is also raw material for many other products, such as the disposable isolation gown, microporous coverall, respirator. The products' variety depends on the processing technology of spunbonded, melt blown, needle punch, water punches, spun-laid, air-laid, hot-air-through thermal-bonded, chemical bonded and wet-laid types. The first non-woven material produced in China was in 1965, but it is not until the middle of the 1980s that large scale production began

(Fonters and Bosander, 2000). Thus the history is only of the last 25 years or so in China. Taking water punches non-woven filter fabric as example, there were only two production lines for water punches non woven fabric in China in 1994 with a small quantity of production of only 1,000 tons that year, and the market share was 35.71% (Zheng, 2007). Following increasing awareness of environmental and safety protection, more factories were set up, and more varieties of filter materials became available. Annual production of water punches non-woven filter fabric reached 95,000 tons in 2006, with a excess capacity of 63,000 tons by 95 production lines in China. The yearly production output of all types of non-woven fabric has increased from less than 5,000 tons at the beginning to over 300,000 tons in 2006, including 13,000 tons of filter material. Some 80% of these filter materials are produced by the method of needle-punch.

Environmental protection regulations issued by the Chinese government in the 1990s meant stricter control over what was released into the environment, which meant greater demand for filter material to avoid secondary pollution. Filter material is widely used in dust/smoke/oil/water filters and collectors in steel production, metallurgical and chemical factories, as well as circuit, computer, automobile and aerospace industries. Super-fine fibre filter material is used for beverage, food, pharmaceuticals and textiles industries, and more filters are applied in family houses, offices, hospitals and hotels. The characteristics of the filter fabrics are high filtration efficiency, low breathing resistance, expendable but with retrievability. The total turnover of non woven filter material production is about 190 million dollars in 2005, with an average increase rate of 31% per year. Yearly production in China occupies almost one-third of yearly production of the world. The expected annual production of non-woven filter fabric will overtake woven filter fabric, and will reach about 30,000–40,000 tons in China in 2010. It is predicted that the annual rate of growth will remain over 10% for the next five to ten years.

In order to get a picture of the development of the non-woven filter fabric as the main product reflecting the industry development in China, and to compare Chinese general

economic development conditions, the historical milestones of this product are listed in a chronological format for reference below.

Table 4.1 : Historical milestones of non-woven filter fabric development

1951	Place: Navy research centre in US
	Technology was invented: fibre <1µ non-woven fabric for radioactivity aerosols
1960s	Place: Exxon Corp in US
	Facility was made for melt blown
1970s'	Place: Exxon Corp--→ Reifenhauser in Germany; J&M in US; Nordson in US; Neumag Saurer in US
	Technology transfer and merger
1984	Place: Exxon Corp-→ Tennessee University
	It was supplied two facilities for R&D;
1989	Place: Exxon Corp and Tennessee university
	Non-woven fabric research center(TANDEC) was founded
1995	World yearly productivity of non-woven melt-blown fabric reached 80,000 -100,000 tons
1995	Place: Kimberly Corp in US
	Spunbonded and melt-blown compounded fabric were made

Source: Company documents in case organisation

4.7   Why the Safety and Filtration Industry in China

The safety and filtration industry provides an appropriate setting for testing the propositions generated in this paper. The author used this industry as the research context for several reasons. First, the filtration industry is an appropriate context for testing organizational change theory, because the industry has sufficient experience with change, its product range has expanded quite quickly, it suffered a great deal of pressure to perform reliably and it has experienced regulation changes and the effects of periods

of disease explosion have been huge. Secondly, this industry has characters of advanced technology, which changes rather quickly. In the filtration and protective industry, core technologies cannot be sealed off, and they remain open to the global environment. There are different decouplings between the core technologies and the regulations demanded on different continents, i.e. the Noish 95 standard is applicable in the United States, CE EN149:2001 is applicable in Europe and AS/NZS1716:2003 is applicable in Australia. The rules of this industry involve centralization for each continent. All new tests must be handled by one of three authority bodies in the world before any market activities. The structure of the population might change quite suddenly and this would have disruptive effects at a global level, as was the case with the new French CE standard for the respirator test because of the bird flu epidemic. Thirdly and interestingly, it is less influenced by economic recession, but can be restructured by a period of punctuational disease explosion. Discontinuously businesses use different technologies and can have different goals (Singh et al., 1986). Fourthly, the comment was made that Chinese concepts might only be fully understood in the context of Chinese society and Confucianism (Gibb, 2006). The author is aware of the difference in economic systems between China and Western countries, and stimulated by the absence of organizational change research in China, attempts to make the research context as explicit as possible. It is possible that the meaning of values to people causes considerable controversy in other contexts (Sekaran, 2003).

For a general understanding of Chinese economic development, so as to compare with the performance of the case organisation, national GDP (Gross Domestics Products) statistics from the year 1978 to the year 2007 are shown in Appendix IX, the trends of GDP statistics development, and the figure showing the trends of GDP increase rate in China are listed as Figure 4.1 and Figure 4.2 below to assist the analysis.

Figure 4.1, 4.2 : Yearly GDP Statistics and Increase Rate of China

Source: China government website   Http://www.gov.cn
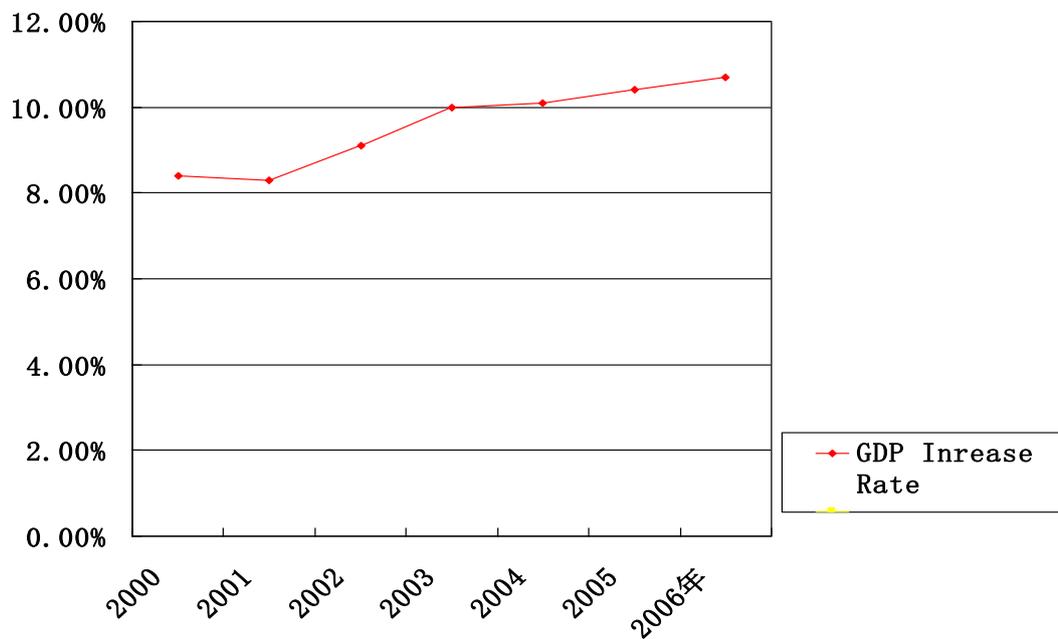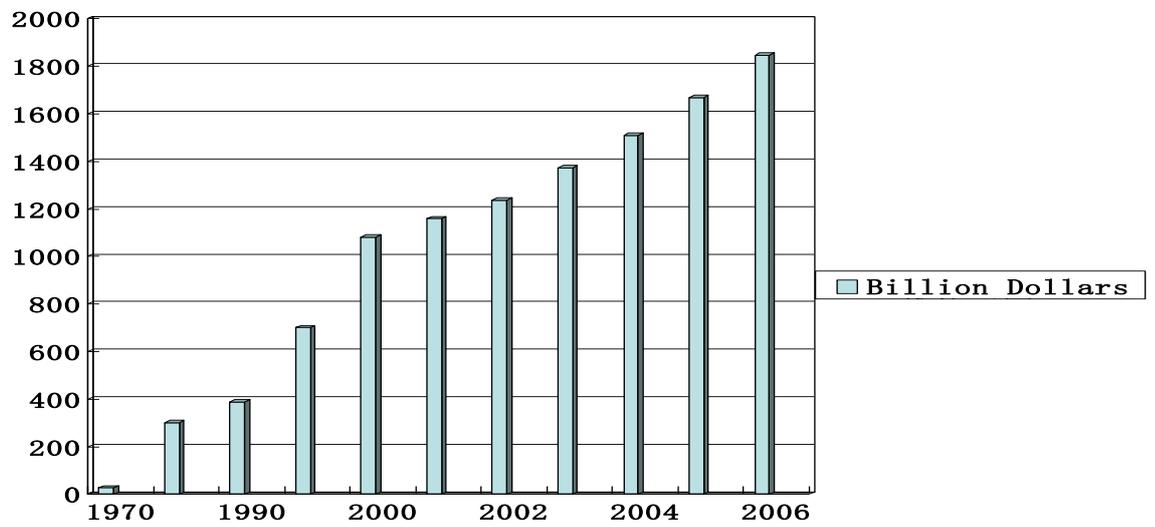
Overall, the safety and filtration industry in China is unique and valuable to be investigated due to the relative heterogeneity of their products and their operations,

allowing the research to unpack organizational changes and add value to further expansion of organizational change theory. Having provided a brief history and description of the safety and filtration industry in China, the following section provides an introduction of the case organisation.

4.8 The Case Organisation Description and Why It Was Chosen

The case organisation (HDHY) examined in this paper was established in 1989, and in 1994 a joint-venture was founded with a firm from the United States. However, the US partner was an investor who only shared the equity and the dividend and did not intervene in any management of the case organization. Thus this feature has no impact on the organisational change events examined in this study. The company was founded at almost the same time as the industry emerged in China and it experienced all the dramatic economic, technological and political changes in China. The organisation quickly expanded from a small filter fabric producer into a multiple protective products manufacture, with four main product series, and around 50 varieties, i.e. a wide range of products covering air-filter media, dust masks, respirators, disposable overalls and work protective uniforms. Currently, it is one of leading manufacturers with registered capital of ten million US dollars, 75,000 square meter workshops, 1,800 workers and 50 technical engineers in main branch. They have several professors as consultants from Beijing Qinghua , Shanghai TongJi and Tianjin Universities. It has been certified by ISO9001: 2000 and ISO14001: 2004. The masks have conformed to NIOSH 42CFR84 (approved by NIOSH/CDC in USA), EN149: 2001 (notified by BSI – CE 0086) and AS/NZS 1716: 2003 (certified by SAI Global, Australia). The non-woven coveralls have conformed to EN ISO 13982-1: 2004 and EN13034: 2005 (Type 5 and Type 6 certified by STFI in Germany).

This study focuses on all three branches of the firm. Following the development, SJZ branch was founded in 2003. It has about fifteen to twenty persons in total, and all have good degree background. The office building is located near Beijing - the capital of China, about two hours away from main branch. SJZ is mainly responsible for the

international business, for the products produced in main branch, as well as for outsourcing orders as a trading company. Simultaneously, SJZ branch is responsible for research and development for the whole company. It attends all the major domestic and international exhibitions in the industry, brings back information of market trends, and the feedback from the international customers, to supply design and data for further product development.

SZ branch was founded in 2007 in order to solve the problem of high freight cost. The main branch was in the North of China, while many customers were in the South, and the products are getting more popular in South. Because the filter material is a kind of product short in volume weight, means the freight costs are more obvious per unit in quotations to the southern customers. In order to reduce the freight cost for customers and supply the goods in a timely manner, SZ branch was founded. It only produces two main products: filter material and disposable dust masks with the basic level of filtration efficiency. Initially half of the workers in SZ were transferred from main branch from North to South of China, the other half were hired locally, in order to keep a stable quality of product and shorten the run-in period of the new factory, the accounting was not separately with the main branch at the beginning, but the management is controlled by itself. In total, there were about five hundred workers. SZ has about one third of production capacity as the main branch. One manager was originally from the main branch, and all the other managers were hired national wide. They are responsible for domestic market exploration in South of China, and the product supervision.

FZ factory was invested in 2005. It is within the main site of the main branch, following the launch of new product - T/C, cotton work uniform. It has a separate business account, financially totally separated, but the management is partly supervised by the main branch. FZ factory is responsible for the production of disposable coverall and T/C or cotton work uniforms. It has two sewing production lines and all the accessories facilities, with around 150 workers.

The branches of the case organisation have totally separate managements and separate

accountings. FZ factory has the separate accounting. The functions of each branch are represented in a chart in Appendix VIII. They do cooperate more closely than other business partners, however the change events in one branch have no effect on change event in other branches. The two branches other than the main branch have short change histories, thus the number of change events selected in those two new branches reflects this fact. Only two change cases from each of them were chosen. Ultimately the interview numbers also reflected this situation. The branch establishment itself was taken as a main change case - plant expansion change - to be investigated in this study. In total, fifteen change events from three branches were chosen covering the time from founding until present lasting about fifteen years, in order to make it possible for achieving logic of replication. The change events were referred from multiple levels. Details about the change events selection are presented later. After explaining the general conditions of three branches of the case organization, we next discuss the reasons why the case organisation is an appropriate setting for organisational change study.

The case organisation was chosen for a number reasons. As was discussed previously, this paper presents a rival theoretical discussion and competing arguments from both organizational adaptation and selection theories. It tries to find a coherent way to reintegrate the well formulated theories of organizational studies in Western countries but with little related empirical work seeks to test them in a specific context. This case organisation represents a critical case for testing because it is a unique case which is worth documenting and analysing, and the historical information and macro level data of the safety and filtration industry are unlikely to be found in any possible database or in any format and to the author's knowledge it has never been examined before. At the same time, the history of the case organisation is almost as long as this industry in China, it has been through all the typical changes and is one of the few safety and filtration organisations still surviving. It is typical also because it is in the first generation of this industry and represents the first generation of private enterprises after the open door policy was introduced in China in 1978. It can supply sufficient change events to study, especially product expansions. The historical information about change

events in the case organisation can be traced and are available and the financial data of the case organisation can be fully accessed. Thus, the propositions in this study can be tested to confirm, challenge or extend the theory, demonstrating whether the proposition is correct or whether an alternative explanation would be more appropriate. The research question how and why do organizational changes lead to different consequences for performance can therefore be answered.

Moreover, the author worked for this organisation for eight years. One of the aims of this study is to assist in resolving the problems existing with managing change processes in the case organisation. It is one of the main practical implications in this study. This work is funded by the case organisation and has their full cooperation. A brief introduction about the main product's development and problems in HDHY reflecting the information regarding the company's development is as follows.

Products of HDHY:

1) Filter material

Filter materials have been produced since 1989 and are supplied to over 500 domestic companies, mainly filter facilities manufacturers. In 2007, the production capacity of HDHY is 5% of all producers in this industry in China, the market share of melt blown filter material is around 15–20%, and 25–30% for needle punch filter material in mainland China. The amount of filter material exported is only a very small portion of HDHY's yearly production, having begun only in 2004 following an inquiry from a global company.

This product was selected when Yang (the founder of HDHY) was seeking a market opportunity to found a business company of his own. He attended a high-technology products exhibition in Beijing and was absorbed by a presentation by professors from Qinghua University. Their topic concerned the production technology of one kind of super fibre polypropylene filter material which did not exist in China at that time. The university was seeking a factory to produce it. If successful, the material would be a

substitute for a very expensive import material. Yang decided to purchase this technology and began to seek a factory which could create the relevant production facilities. After several months' hard work, with the guidance of the professors and consultants for several companies, the equipment was assembled and installed successfully; the investment only cost approximately USD 60,000, which was far less than the six million dollar investment required in the United States.

Following more customer demanding, their facilities expanded to ten workshops, seven production lines of punch-needle polyester filter material, and 20 machines of melt blown polypropylene non-woven fabric. There are four main types of filter fabrics and six types of production processing methods now in HDHY. However, there is no separate R&D (Research and Development) department; most new ideas come from the owner and his son who attend conferences and international exhibitions, explore and update customer samples, communicate with professors and confer with their laboratory staff. The facilities are modified by in-house technology staff based on professors' advice for product development. The laboratory equipment for testing the material and respirators are primarily imported from the United Kingdom, USA and Japan. The key staff are supplied with many training opportunities in both China and abroad.

2) Respirator

Based on some inquiries for nuisance dust masks from existing customers, and also in order to further utilise the non-woven filter material they produced, Yang decided to enter the dust masks and respirator market. The workshop and production facilities were available in 1992. At that time, nuisance dust masks were only produced for the domestic market. A series of particulate respirators were developed around 2002. Now there were over 40 types of dust masks and respirators with a production capacity of 500,000 pieces each day. Some accessories and raw materials used for respirators are imported from the USA and United Kingdom. The compound respirators are all for exportation, covering the market of North and South America, Europe, South-East Asia, and Australia. The respirator provides 40% of annual turnover of HDHY. A big

investment in hermetically sterilised workshops for one kind of respirator was launched during the Swine Flu period.

In general, R&D for respirators also depends on 'customer requirements' and 'self-invention'. For example, usually a higher filtration efficiency will cause higher breathing resistance. The filtration efficiency of a FFP3 respirator for European CE standard is up to 99% against solid and liquid aerosols where the breathing resistance is higher, which might cause the consumers difficulty in breathing. In order to solve this problem, some manufacturers enlarge the size of the respirator. Instead, HDHY provides a unique pleated design for the FFP3 respirator. The folded design can create a larger effective filtration area which can obviously lower the breathing resistance. When HY 85/89/92/93 new series fold-flat respirators were new to the market, most consumers were used to, and still like to wear, traditional cone-type respirators. However, the benefits of fold-flat respirators such as easy storage, individual hygienic packaging and a good facial fit, have increased their popularity.

During the products expansion process, HDHY achieved several patents and Chinese honour certificates, such as anti-bacterial nanotechnology filter dust masks which contributed greatly in preventing a SARS explosion in 2003. In addition, they were honoured to achieve the quality standard to bid for a French government order in 2005 for over 300 containers, 33 million dust masks to protect against bird flu. HDHY won the bid and these items were exported to the French government for every single citizen's protection.

3) Disposable coverall, poly-cotton/cotton working uniform

Sewing workshop and facilities were created in 2005 following a new staff buy in with relevant previous experience in this area. The purpose was to organise 'safety kits', which some customers required, and supply more complete protective products and better services. As mentioned earlier, the disposable coverall and reflective garments have conformed to CE type 5/6, EN149, EN471, EN470, EN531 certificates, which is

achieved depending on the technology of the filtration material. However, several years after these products were launched, items such as cotton flame resistant work uniform still did not perform well in the market.

Overall, HDHY seeks to provide up-to-date, high performance to price ratio, quality products at competitive prices for customers. By doing this, HDHY has obtained the majority of international product standards required in the markets. The owner has been taken as a Chinese government member as his tax contribution is significant each year, and he could have the rights for further national law and regulations negotiations for the future. However, during the rapid series of product expansions and organizational restructuring processes, related problems[21] in the change processes are also obvious, which need to be closely observed. There were various levels of product expansion and withdrawal, as well as other types of changes since the time of founding. Some failed, some were relative successes. HDHY as the single ever changing case organisation offers an abundant number and kind of changes with different consequences, making it an excellent setting for testing organizational change theories for this research. Milestones in the development of HDHY from company document are listed in Table 4.2 below, The change events are to be considered next.

Table 4.2: Milestones of the case organisation

Source: Company documents (HDHY)

1989	永年县滤材厂成立，生产熔喷 PP 无纺布片材	Melt blown filtration media factory was founded.
1994	开发一次性口罩并出口美国	Disposable masks started to be produced and exported to US.
1994	成立合资公司，改名为邯郸恒永防护洁净用品有限公司	The joint-venture was established and renamed to the current company name.
1997	连续熔喷滤纸	Continuous melt-blown PP media was

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[21] The problems in the change processes in case organisation are mentioned in introduction chapter.

1998	开始生产粗中效过滤材料	researched to be produced. Needle punched incohesion non-wovens started to be produced.
2002	搬迁至永年高新技术开发区	Headquarter and main factory moved to Yongnian Hi-Tech Development Zone, the land was purchased.
2003	外贸公司成立	Shijiazhuang Hi- Tech Corporation was founded. It is responsible for foreign trade and R&D, based on the original foreign trade department.
2003	获三项抗菌口罩专利，为抗击非典作出突出贡献	Three patents for anti-microbial masks were approved. HDHY contributed was against SARS.
2005	产品大批出口；销售过亿	The sales of exports was over RMB100 million/ USD 12.5 million.
2007	新厂扩建；设立东莞分厂	Great expansion of Yongnian factory was made, and a new branch - Shenzhen branch factory - was established.

4.9 Organizational Change Case Selection

Change events form the embedded analysis cases in this study and needed to be chosen deliberately before the formal data collection began, as the result of the pilot study showed, in order to cover representative change events of different types and from different times, and with different distances. This also conforms with the results of other studies, which find that the causes and effects of various kinds of organizational changes are not homogeneous (Amburgey et al., 1993, Miller, 1997).

Fifteen change events, including four types of change were selected with an iterative nature considering several reasons as follows: Firstly, it was necessary to cover the

whole change history of organization, from the founding to the end of the observation period. The strength of examining the historical event and information is proposed by previous studies (Amburgey, Kelly et al., 1993). The method is appropriate for the study of time continuous change process, and it is helpful to distinguish the consequences of content and process by a fine grain approach (Tuma & Hannan, 1984). The case organisation was founded in 1989, the new form of joint venture was established in 1994, safety and filtration industry was emerged in China almost at the same time as the case organisation established, about 25 years of history or so. The change events selected in this study covered the history from 1994 to 2008, in order to represent various characters of different periods of time in the change history of case organisation and to reflect the industry.

Secondly, in order to examine the consequences of various organisational changes, and to avoid alternative explanation, it was necessary that the change periods of all change cases selected did not obviously overlap, and no major other cascades occurred (Hannan et al., 2007). The process of cascade might not be clearly cut, the preliminary consultations were done during the pilot stage. Tracing change over time is the major strength of a case study (Yin, 2009), and this study can examine the financial data before and after the change event compared to the average data, and the primary evaluations. Both the instantaneous and delayed effects of change are considered. The dynamic approach to examine the impact of timing and type of change on performance in an organisation is more proper than a cross sectional approach which assumes temporal equilibrium (Tuma and Hannan, 1984).

Thirdly, the types of change cases were decided according to the popularity of change type discussed in the previous literature; It need to be applicable to the research context. Thus it was also chosen according to the frequency of adoption of each change type in the change history of the case organisation (See Chart 4.3), and the characteristics and the speed of development of safety and filtration industry. For instance, since product substitution is a typical characteristic and most frequently happened in the development history of case organisation and industry, product expansion and deletion were chosen

as major types to be examined. Ultimately, four main types of change were decided: niche expansion, product deletion, plant expansion and leader succession, which were four main types of change according to the frequencies of adoption in the change history. The change cases of each type have to be typical and representative in the change history. The literature discussion relating with these four types of change is presented in the separate section followed.

Furthermore, the author is aware that number of change events is reflected in the number of replications, with greater certainty of the case results with larger numbers (Yin, 2009). But if the number is too big, the information from each case could not be collected in great depth, and the use of the case study diminished. In order to achieve replication, at least two change events of the same type of changes within a sub-group were guaranteed, two change cases from each branch were considered. Based on all the above considerations in this section, also due to qualitative and in depth investigative nature of this study requiring high expenses and energy (Sekaran, 2003), 15 change cases were decided.

In addition, Miller (1997) claims that the cases have to satisfy many criteria of which the most important one is that the need to be traceable and the informants involved in the processes identifiable. Considering this, after reviewing company documents, based on the result of pilot stage, the change cases were finally chosen after a long process of reviewing the literature and querying persons in the organisation who are knowledgeable about each change event. The change events are listed in Table 4.3 below in chronological order, and Chart 4.3 shows the frequencies of each change type.

Table 4.3: Change events list in this study

Organizational Change Events by Year		
Number	Year	Change events
1)	1994	New product, disposable nuisance dust masks
2)	1997	Product deletion, breast pad
3)	1998	New technology, needle punch non-woven; New product, Incohesion material
4)	1999	Product deletion, battery separators
5)	2001	New product, compounded respirator
6)	2002	Plant expansion, headquarter moved (main branch)
7)	2003	Plant expansion (SJZ branch)
8)	2003	New product, horizontal and vertical compounded respirator
9)	2004	New product, disposable coverall
10)	2004	New product, filter bag
11)	2005	New product, cotton and T/C protective uniform, sewing factory was founded
12)	2006	Plant expansion, main branch
13)	2006	Top leader succession in FZ factory
14)	2007	Plant expansion in SZ branch
15)	2008	Top leader succession in SZ branch
Total Number of events: 15 Niche expansion: 7　　　　Product deletion: 2 (Product expansion) Plant expansion: 4　　　　Top leader succession: 2		
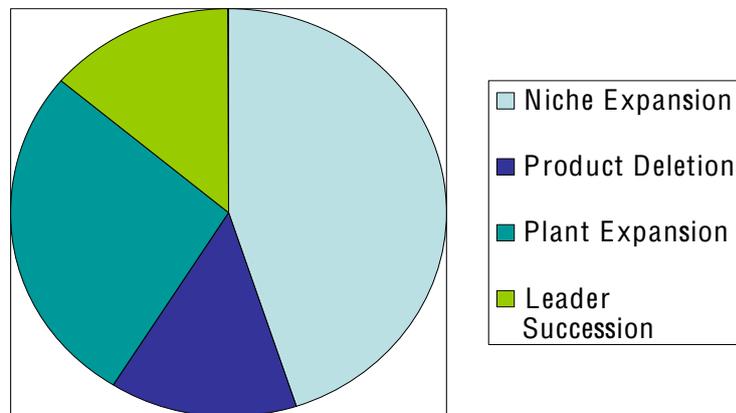
Overall, this study considers each type of change in the case organisation as distinct. The change events were selected based on literature guidance, the feedback from informants, and the timing of the change events in the history of the case organisation, keeping in mind their theoretical value, their typicality in terms of the organizational characteristics and which have substantial consequences to firms. Several researchers criticise the reliability of this approach due to memory distortion and subjectivity of the data by querying the informants. However, it can be improved by the other two methods. During the pilot stage and observation period, the author accessed the company's documents and archives, and made informal inquiries to the related persons who have many years' experience in this industry (Hickson et al., 2003). Especially, if the changes were very important, managers were able to recall the path easily and were able to assess the long term outcomes (Miller, 1997: P581). For the retrospective history events, data are both archival /documentation and interview-based. More discussion about documentation is supplied later in this chapter. The selection discussion and results are shown next.

4.9.1 Change Type Selection

As we discussed above, in order to study the extent of organisationalchanges and their consequences on performance, and based on many considerations, four kinds of change were examined in this study. The four types are product expansion, product deletion, plant expansion and top leader succession. In addition to being the most applicable to the research context, they are changes that are commonly studied in prior research and potentially important to this research.

Both product expansion and product deletion were chosen because the change processes involve production facilities, product lines, technology and workers, variables that have substantial implications for internal structure, and consequently for the eventual effects of organisational change, especially for testing niche expansion theory. Kekre and Srinivasan (1990) argue that product line changes that involve alterations of the production process are more likely to be associated with internal structural change. Each of the products is derived from somewhat different technologies and requires different facilities to make it. Different products also probably apply for different subpopulations of consumers which require different marketing activities (Folwell and Baritelle, 1978), which in turn may also influence an organisational structure.

However, product expansion and deletion are assumed to have different effects on structural variables. For instance, personnel growth in a manufacturing firm from 300 to 800 personnel for the new production line leads to increased rules and regulations, more hierarchy etc. But a product deletion might not have a comparable effect (Freeman and Hannan, 1975). The effect is measured by the numbers of hierarchical levels, times of workers shifting, the group of work units and extent of product diversification extent from both archival sources and primary interviews.

Leadership change is chosen because of the correlations between top management characteristics and company performance, which are shown in many previous organisational studies (Boeker, 1997). There are three theoretical arguments for

leadership change consequences: 1.) managerial succession lowers organisational performance; 2.) managerial succession improves performance; 3.) succession does not affect the performance, or only influences a limited part of the organization, thus leads to small variation in performance (Carroll, 1984). There is also a view that performance is a pre-condition to change, where poor performance leads to an increase rate of leader succession, but the effect of performance on leadership change is not automatic (Ocasio, 1994).

Moreover, some theorists stress the important role of top leader succession in overcoming inertia and initiating changes in the organisation(Brady and Helmich, 1984). A succession makes substantive change more likely in an organisation's products, strategy, and operating systems. The effect can be disruptive, because it lowers employee cohesion and interrupts the unity of command (Boeker, 1997). There is a more serious risk increased by succession of founder (Carroll, 1984), and is most precarious if the organisation is controlled by individuals. However, Singh et al. (1986) argue that leadership change may involve a relatively peripheral change. The main question is whether the change of leader affects the core or peripheral feature of the organization, consequently whether the effect is disruptive or not. Carroll (1984) suggests this depends on the organizational context, timing in the organisational life cycle and type of transfer. A case research approach might reveal the multi-dimensional nature of change consequences. To better understand the succession change effect, this study will examine the effect of leader change by describing both the organisational context and change procedures.

Plant expansion is another important organizational change, involving changes in the domains of services, product line adjustment, facility expansion, land acquisition and personnel growth. Structural inertia theory might predict that plant expansion would disrupt the core feature of the organization with negative consequences. However, the gain from plant expansion, like economies of scale, may more than compensate for this core disruption and may promote positive performance. For instance, the land status changing by the land acquisition may protect the organisation from supply irregularity,

which immobilizes capital in the short term, thereby reducing the liquidity form of assets and instability (Delacroix and Swaminathan, 1991). Land can be used to secure loans, decreasing the pressure during difficult periods. Especially when land values rise, the initial less liquidity of assets can protect organisation to avoid environmental hazard and maladaptive behavior in organisation. Land acquisition and plant expansion frequently happened during the years under study in the case organization which will be favorable to the results.

4.10 Data Collection

A single case organisation with three branches and 15 change cases calls for intensive data collection. The in-depth investigation of change processes and contents of this study depend on multiple sources of data gathered by cross validation or triangulation. Following a qualitative and case study approach, three methods - semi-structure interview, observation and documentation are adopted. In the following subsections, each of these approaches is discussed and a brief introduction of triangulation is provided.

4.10.1 Semi-structured Interview

Interviewing is regarded as the best technique and most important source for collecting valid and reliable data relevant to research questions (Saunders et al., 2003). It is claimed that it is the method which reflects views of social science knowledge that is provisional, uneven, complex and contextual (Arksey and Knight, 1999). It can explore the relationships between different aspects of the situation (Rubin and Rubin, 1995), and achieve a deep understanding and more flexible and open with the respondents to achieve reliable answers (Gillham, 2005).

Interviews with managers are frequently used to explore firms' manufacturing strategies, such as the work of Fine, Hax, Platts and Gregory (Barnes, 2001). They employed semi-structured, open-ended interview techniques to enable interviewees to expand on

what they consider to be important. Semi-structured is used in order to 'understand the relationship between variables, such as those revealed from a descriptive study' (Saunders et al., 2007: P314). It is recommended that the interviews are guided rather than rigid (Yin, 2009). It satisfies the needs of inquiry while simultaneously asking questions in an open-ended format (Yin, 2009). This approach is taken as a mixture of structure and unstructure, satisfactorily meeting most of the criteria of interviews (Gillham, 2005, Arksey and Knight, 1999).

This study uses a semi-structured interview. It allows employees in the case organisation to speak of their experience with the change events, and the conversation can be loosely guided by adopting semi-structured approach (Horton et al., 2004). It is suggested that the listening and questioning skills of the researchers need to be practiced and stressed. Researches need have the ability to ask quality questions, take advantages of any unexpected opportunities, become an adaptive and flexible listener and to assimilate a large amount of information without bias (Yin, 2009). The author of this study executed interview three times for her master dissertation and pilot studies before the formal interview for this work. The interview environment and interviewee selection are presented next.

4.10.1.1 Selecting Informants and Interview Numbers

The sample of interviewees should be fairly homogenous and share critical similarities so as to discover the shared understanding of a group, and maximise the depth and richness of the data to address the research questions (Gibson et al., 2004).

The author wanted to obtain response from multiple levels of hierarchy covering the change decision maker, change implementers including middle managers, office staff and front line workers, those who had at least five years work experience in this industry, and who had been through the change events in the case organization. The key informants – change decision makers who are at the top of hierarchy of the organisation were interviewed first. The facts they present of the change events, even their insights

into certain propositions, are the basis for further inquiry (Yin, 2009). The primary informants suggested additional informants involved in each change event. This sequence of interviewing also demonstrated that this investigation was supported by top leaders, which helped to achieve more support and trust from subordinates. This type of interview is called as in-depth interview, the technique whereby informants refer to another subject or informants who will be asked to give the name of another informants, and so on, is called snowball sampling and is used in numerous prior studies (Atkinson and Flint, 2001). The possible bias of over dependence on the primary informants can be overcome in the second stage of interviews. It can also be overcome by using other data sources.

Moreover, the number of informants and the number of interviews were not fixed. Initially, the interviews were carried on until the information from each level was saturated, and the information for each change case was consecutive and integrated. Eventually, thirty-four interviews with twenty-five informants covering different levels in the structure of the organisation were completed. The key informants, for instance, the people experienced more change cases, were interviewed more than once. The positions of all informants in which branch of the case organisation are shown in Appendix VII. The change cases with which each informant was associated are also listed. The data source for any direct quotation from the interview transcripts is shown in the footnote of this thesis relating with this appendix, i.e. which number of informant gave that comment, what position in which branch this informant was at, and which change cases he/she talked.

According to the change history of each branch of the case organization, as mentioned in the case organisation introduction, SJZ branch was founded in 2003, FZ factory was established in 2005, and SZ branch was founded in 2007. They had short histories and consequently only two change case of each branch were chosen, whereas the main branch had nine change cases. The sub-branch establishment itself was taken as a main change case - plant expansion change - to be investigated in this study. Thus the number of interviews in each branch also reflects this fact, i.e. three interviews in SZ branch and

twenty-one interviews in main branch. Also there is another issue. Although the management of each branch is totally separated, they do cooperate more closely than with other partner organisations. Thus as we can see from Appendix VII, the informants from the main branch sometime covered the information about change in other branches, and vice versa. Overall, the interview and informant numbers are decided by the information saturation from each level in the hierarchy.

4.10.1.2   The Interview Questions and Interview Operationalised Design

The guided interview questions reflect the propositions in the theoretical discussion consistent with the research objectives of this study. They begin with a request for a description of one of the change events. The remaining questions are divided into four levels: some guided questions refer to specific informants, some questions are designed for specific cases, a portion of the questions are for cross subunit by pattern of matching, and the rest are for the entire study. The interview questions were guided by several supervisors from both the United Kingdom and China, and improved by inquiring of several managers who have business degrees. For instance, there is a question about the niche expansion in order to examine the effect of change distances on change performance. The question is "Do you think it matters whether the new product is related or unrelated to previous products? Why?" If the answer is yes, the further question is "In what aspect, do you think this new product (in a specific change case) is related to a previous product?" This enables the author to examine the distance of the niche expansion. This question is suggested by two theoretical product expansion models, one is a three dimensional model proposed by Haveman (1992), the other is an ecological four change type model in the work of Hannan *et al.* (2007).

Each question is accompanied by a list of likely sources of evidence, including the names of individual informants, the likely company documentation or observation. For more precise information, as mentioned earlier, the interview questions were sent out to each informant two days before his/her formal interview appointment, with the option to reschedule. This allowed the informants to choose the most convenient time and and

gave them time to familiarise and recall the most impressive change events, but not long enough to prepare the answer, thus avoiding interview bias. Each informant then described the process in a narrative manner.

A total of forty-six open-ended questions were typically asked in interviews ranging from ninety minutes to two hours. The interviews were mainly held in the meeting room of an office building in the main branch of the case organisation during work time, as well as the meeting rooms of other branches. It offered a comfortable and safe place to avoid any feeling of restriction (Good, 1999).

Because the author worked in the case organisation before and also interacted with employees in the observation periods, it was possible to create a relaxed environment for conducting the interviews. The informants gave the author their full trust, and talked freely. It was considered that it might induce a possible bias if the author was too familiar with the informants. However only a limited number of managers worked closely or met frequently with the author when she worked there. Efforts were made to exclude these managers from the informants' selection process. Her prior knowledge of the industry and familiarity with the case company also benefited the interview processes. Further, the author was able to keep in touch with the key informants in the case company, making it possible to cover any information gaps detected during the later analysis. Overall, the advantages to the research results are greater than this possible bias.

To further clarify, the author is the independent researcher registered as a full time DBA student at Durham University when this research was conducted. Although this project is funded by the case organisation as a reward to the author's previous work contribution, the author has the right to decide whether to bring back this study to the case organisation or not at the end of DBA period. Thus there is no direct personal influence on the author herself or on any informant. The data collected in this study are reliable and are purely for research purposes. This was explained formally to all the participants in a company meeting before the interviews. In addition, all primary

information from interviews were validated by company documents and observation. It is preferable that informal private communication during the observation period can be a complementary source for more data validity. It is supported by Vinten (1994) that there is no disadvantages to a student working, undertaking personal observation and analysis of individual and organizational instances. More discussion for data validity and reliability will be discussed in a section later in this chapter.

In the second portion of the interview, the stories of each change event from the first round of interviews were traced by combining the accounts of each informant into a time line that included all the detailed processes. It was developed into a change case event description. The outline is presented in Appendix II. It generated an overview of each change process within the firm. Thus some informants in the second portion were asked relevant standard structured questions that concentrated on facts and more detailed points, rather than interpretations, i.e. "When did this become an issue? How many days did it take to be resolved or before you assumed it was been resolved?"

It is recognised that Chinese–English translation for interview questions might be an issue. After compiling the questions and translating into Chinese, the author asked two friends to review the questions in both the English and Chinese versions. One is a general manager who has his own company and graduated from a UK university, the other is a lecturer at a business school in China. Both speak Chinese and English, and can clearly understand the content of the questions. The Chinese version is further examined according to their advice to eliminate the individual bias for data reliability (Balbinotti et al., 2006). Similarly, when the responses were translated into English after the data collection, the author also asked their assistance to look at the answers in Chinese and English following initial translation by the author, in order to find any unacceptable level of agreement. Both the English and Chinese versions of the interview guided questions are listed in Appendix III and Appendix IV. The informants' positions and the primary data collection schedule are included in Appendix V for reference.

To clarify, two extra interpreters were invited by the author based on her personal relationship, the purpose purely for more data reliability to support Chinese- English translation and data analysis, to eliminate the individual bias and points of uncertainty. For instance, there were some uncertainties in the translation and data analysis process. As an example, one manager informant mentioned there was a serious cooperation issue between departments when one new project was launched. Another informant discussed it in terms of a more complicated personal relations issue between new and old workers in different workshops. One interpreter agreed to code the first situation as organizational intricacy, the second one as asperity, whereas the other two interpreters considered both of these situations were due to intricacy. There were similar descriptions in Chinese for this issue in two transcripts. After a discussion, all of three interpreters agreed the second situation should be coded as intricacy rather than culture resistance - asperity, as the description in Chinese emphasized unsettle relations among units leading to a more complex process rather than moral resistance. More uncertainty examples are shown in the data analysis chapter. The role of the other two interpreters in eliminating individual bias and increasing data reliability is obviously shown here. Both of them have fulltime jobs and offered their time and advice for free.

Further, each potential informant was asked to sign the consent letter ensuring the information they supplied is confidential and only for research purposes, as well as that we informed them in advance of the approximate length of the interview (Dean and Whyte, 1978). Barnes (2001) advises the tape recording of interviews if possible. He mentions that detailed note-taking is difficult if the interviewer is alone, and it can be hard to remember all the details when analysing the data later. During the interview, the researchers need to record the exact the words of the informants since the terminology could reflect their orientation. So the author recorded all the interviews together with taking notes for which she obtained permission. The pilot study included the trial interviews before the formal interview procedure and was very helpful (Sekaran, 2003). As mentioned in the pilot study section, the length has been readjusted, and restructured.

Overall, the interview informants supplied important insights and information with regard to both prior and current events, and they further suggested other possible sources of evidence. The interview processes generated more information about the change cases. Thus, the interview was a valuable and main source of evidence for this research.

4.10.2 Observation

There are the inherent biases in each of the data collection methods, therefore multiple resources by multiple methods of collection are recommended (Sekaran, 2003). The data collection procedure does not have a clear cut-off point, only until the main topics have been covered by two or more different sources (Yin, 2009).In fact, the various sources are highly complementary, thus the case study is suggested to use as many sources of evidence as possible.

Participant observation is described as 'actually participate in the events being studied, serving as a staff member in an organizational setting' (Yin, 2009: P111). Vinten (1994) points out that there is no disadvantage to a student working, undertaking personal observation and analysis of individual and organizational instances. Participating is a valuable way to increase staff interaction (Yin, 2009, Burgio et al., 1983). Yin (2009) argues that the observer might be able to manipulate minor events which produce the potential bias of this approach. However the manipulation is not as precise as those in experiment, and can supply a greater variety of situations to benefit the data collection process. As a member of the case organization, the author is not only able to "observe", but is also able to experience several major change events in the past several years of work in the organization. It needs to be clarified here that for participant observation into past change events, the author was an employee in the case organisation at that time instead of a researcher, and any previous note-taking was not for the purpose of research. The experience and working documents of the author had no research subjectivity bias at that time and bring benefits to the data analysis process. It provides 'an unusual opportunity to perceive reality from the view point of someone inside the case' (Yin,

2009).

Moreover, the phenomena of change events is not purely historical. Some current environmental situations and relevant change behaviours are available to be directly observed by the researcher, which aids understanding of the context and the change process. For instance, the changes made by the case organisation in reacting to the swine flu explosion in 2009 were witnessed by the author who was involved in the process during the observation period as a researcher. The direct observation approach allows the researcher to collect information which is very helpful for exploring the issues referred to in the interviews.

Consent for direct observation was given by the general manager of the case organization, but not by every single person who was observed. The author was introduced to the employees in a formal company meeting, where the purpose and the nature of this research were presented. The author thought that it was more appropriate to inform all employees who were to be observed due to the ethical issue, as the awareness of employees for observation does not have much effect on the organizational change process (Denzin and Lincoln, 2005, Mikkelsen, 2005).

Formal observation took about seven months including the time to conduct the pilot study and the time for formal field work. Most data collected through observation were recorded in a diary by bullet points. It included the information from observation of formal company meetings, the observation of workshop operations, and product line readjustment, even the furniture changing in the office building and casual sidewalk exchanges. All might provide information about organizational conditions and characteristics. For instance, the establishment of hermetical sterilized workshop is a huge investment and one of the key parts for developing and manufacturing FFP3 respirator in the case company. Observation evidence showed how workers adapted to the new working environment, how the workers reacted to being chosen for the advanced workshop and how the organizational structure was readjusted accordingly. Furthermore, observation of the actual use of technology in workshop and in laboratory

was invaluable for understanding the professional terminology and solving the potential problems being encountered easily in the data analysis process, and is helpful for understanding the motivation and resistance to the change events.

4.10.3 Documentation

Company documents are one of the major sources of evidence in the case study. One of the objectives was to examine the record of financial performance, trace the financial data to examine the effect of change, and corroborate the primary data from both observation and interviews. It also can verify the correct writing, name, title and time that might mentioned in interviews by using it provide other specific details. The author fully accessed the documents in the case organization. It helped her to trace back the strategies and plans over time, formulate time series dynamic database compatible with event history techniques (Tuma and Hannan, 1984), and supply the possibility of examining the prior and consequences of the change events for better interpreting the change process, and cross reference of data sources, for testing the theoretical model.

A large amount of documentary evidence from company sources was collected, including archival documents involving corporate annual reports, management manuals, company financial reports, department meeting records, e-mail correspondence, memos, time organizer and notes. Although only a few documents could be copied because of the confidential agreement, the key financial information was extracted. External data from sources like publications, newspaper, database, websites and journals, were also collected and formed the background of change cases and industry context.

Qualitative researchers are often told it is important to identify the boundaries of materials which are central to the research interests by systematic approach during the data collection process, and to make clear that the purpose of the files was for a specific audience, instead of the investigator of the case study, so that the data collection procedure will not mislead and the content could be correctly interpreted (Yin, 2009). The kinds of documents accessed in this study relevant to the key research questions are

outlined in tabular form in Table 4.4.

Overall, documents and observation offer valuable opportunities for corroborating the interview data through methodological triangulation (Barnes, 2001). Thus, the data collected for this project are as objective and scientific as possible. Data convergence from multi-sources of evidence is discussed next.

Table 4.4 The list of documents accessed in three branches of case organization

Change events	Number of documents	Documents Description
Main branch		
1.) Disposable nuisance dust mask product expansion	4	- Product brochure; - Financial report; - Investment analysis report; - Government authorization file;
2.) Breast pad product deletion change case	1	- Financial report;
3.) Incohesion material product expansion	5	- Product brochure; - Financial report; - Documents concerning the training course on new product; - Investment report; - Government authorization file;
4.) Battery separator product deletion	1	- Financial report
5.) Compounded respirator product expansion	4	- Product brochure; - Financial report; - CE & Noish audit documents; - Product test reports;
6.) Plant expansion one	3	- Company application documents; - Government authorization report; - Documents concerning the implementation process and relevant training courses
8.) Horizontal and vertical compounded respirator product expansion	4	- Product brochure; - Financial report; - CE & Noish audit documents; - Product test report;
10.) Filter bag product expansion	3	- Product brochure; - Financial report;

		- Documents concerning the training courses on new product;
12.) Plant expansion three	4	- Financial report; - Documents concerning the implementation process and relevant training courses; - Government authorization file; - Asset assessment report, including the table of registered capital prior and after the change
FZ factory (main branch)		
11.) T/C, cotton work uniform product expansion	2	- Product brochure; - Financial report;
13.) Top leader succession	2	- Financial report; - Documents concerning internal operation process, i.e. order arrangement documents;
SJZ branch		
7.) Plant expansion two	3	- Financial report; - Government authorization document; - Company exportation analysis reports including customers locations, product preference, export development trends etc.
9.) Disposable coverall product expansion	5	- Product brochure; - Financial report; - CE audit documents & product test report; - Meeting note; - Training record for new product;
SZ branch		
14.) Plant expansion four	2	- Financial report; - Documents concerning the regulation updating;
15.) Top leader succession	1	- Financial report;

4.10.4 Triangulation

The richness of the change phenomena in this study requires tactics to distinguish the data points from other many more interesting phenomena. One essential tactic is to use multiple sources of evidence to converge in a triangulation fashion and establish construct validity and reliability (Yin, 2009). Triangulation is defined as using multiple sources of evidence in the same study to decrease the bias associated with using a single method (Bryman, 2004, Yin, 2009). The researcher is aware that only using multiple

sources of data, analysed separately with comparison of the results from each set of analysis, is not convergence of evidence. Really triangulation of the data means the facts or events should be supported by more than a single source of data.

Patton (2002) identifies four type of triangulation as follows: data triangulation, investigator triangulation, theory triangulation and methodological triangulation. Yin (1994) argues for using data triangulation rather than using various methods. Denzin (1978) supports that the same method can be conducted to maximise theoretical advantages by applying data sources triangulation. In this study, the author applies several data sources - interview, observation and documentation - to insure the study's validity and reliability. The details are listed in Table 4.5 as below. The themes and intercorrelations of this study are formulated clearly and presented in Appendix XII, which shows the intercorrelations among research objectives, research questions, propositions, findings and conclusions, change events, interview questions, evidentiary sources, the informants number in the informants list, and the department of the informants in the case organisation. I demonstrates how three sources of data are triangulated to support the results. More details are discussed in the data analysis chapter.

Table 4.5 A summary of the interview numbers, documents numbers and observation time in three branches of case organization

Sources	Main branch	FZ factory Main branch	SJZ branch	SZ branch	Total
Interviews	19	3	8	4	34
Documents	29	4	8	3	44[22]
Observation	3 months		3 months	2 weeks	28 weeks
	+ Previous 5 years of full time and 2 years of part time work experiences in case organization; + During participation observation period, meetings & business visiting involved: ● Internal company meetings; (main branch) ● Audit meetings with authorization organizations; (main branch, the US, the UK) ● Suppliers yearly meeting; (HK) ● Business partners' visiting (Inland of China); ● International customers visiting (China: SJZ, Suzhou, Shanghai; the US; the UK);				

4.11 Method of Data Analysis

Data analysis starts soon after data collection. All multi-sources of data are organised and documented into one case study database, which includes case study notes, tabular material and narrative document. The detailed interview notes are reorganised in narrative files within one day of the interview according to the 24-hours rule by listening to the recorder and reading the transcripts together (Eisenhardt and Martin, 2000). The research note in the form of diary from observation is organised and categorised according to the major change events and subjects and is available for later access. All related documents are stored in a primary file and secondary file according to their importance, and made ready for later retrieval. The tabular material and narratives from either company sources or formulated by the author in the data collection process are also stored separately.

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[22] Some documents here are referred to more than once because they refer to a different change event.

Each change event has a separate sub-database based on the convergence of several sources of data instead of a case study report, because the narrative report contains enough data, different readers could draw different conclusions from the case report (Yin, 2009). In a later stage, the data are organised in hierarchical trees with clear structure after cycles of adjustment and reorganisation. The matrix of categories for each change event is made, all data are revised and tentatively categorised, retaining the meaning and reduced into tabular format, so that data can be condensed, displayed, analysed, and compared clearly in matrix form (Gillham, 2005), for ease of recognising the theme and better interpretation (Saunders et al., 2003). The organizational traits mentioned more than once are recorded. The inductive analysis process is helpful for thinking about the emerging ideas and questions during the organising process. It could also be used for improving of the interview questions for the remaining interviews (Baron et al., 2001).

The qualitative data analysis process is assisted by Nvivo software. It is a very useful tool that can help to code, categorise and store large amounts of materials and is specially designed for qualitative data (Strauss and Corbin, 1998, Powell and Ennis, 2007, Heffernan, 2004). It allows the research inductive analysis and generates level codes and memos to represent categories and develop themes of the data collected from the interviews, observation and documentation in the study (Richards, 2005). To clarify, it is not an analysis programme. It is used to organise and store the data to facilitate the access of the data in this study. The researcher is responsible for importing and organising the data collected from the interviews, the observation notes and company documentations into different catalogues, organising the hierarchy tree and consequently interpreting the data.

The main activities are tracked over periods of time. Change processes can be dynamic, and not necessarily progress in one direction; the process can reverse or regress. The systemic reform occurs only when all the activities are aligned and work together (Yin and Davis, 2007). The matrix form covers major processes of change events by months

in chronological order. The cascade changes during the time interval are recorded and included. The sources indicating interview, observation and documentation are clearly marked. The major activities in change process are listed corresponding with the company's financial performance. Narrative descriptions for 15 change cases are presented in Appendix I. Moreover, the frequency of different types of change events is tabulated.

The preliminary analysis stage of this study is actually a process of categorise–code–test by first pair of change cases–refine the literature discussion and proposition–refine the data materials–recategorise and recode. Some coding examples are listed in Table 4.6 below, including the information of other source of validation.

Table 4.6   Examples of interview transcripts' categorising and coding document

Theme & Proposition	Interview Questions	Interview Informant & Change Event they covered	Direct Quote Example	Code for Operational Criteria	Theoretical Concepts	Other support
Theme 1 Proposition 1	Interview question 5, 8, 9,10 (Appendix III -Interview question list)	Informant 1 While talking change case 11 (The position of informant is shown in Appendix VII)	" ... I did not think of previous changes when we made decision…" "... this product was decided simply because we had a new manager who had some experiences in this area…"" I did not agree there was a effect by previous change type."	Negative opinion ("-") (See Table 5.2, the details explanation is in Paragraph 3-7, Section 5.3)	Inertia implication -Modification routine	Company documents: Direct measures of changes to internal routines were made. Counting the cumulative number of each type of change made in the past, the document showed there was a high repeat rate of the same type of change in the company's history, i.e. there were nine occurrences of product expansion changes and five occurrences of plant expansion changes.
		Informant 7 Change case 3	"I did prefer expanding new products and seeking new technologies if the market had any opportunities…"	Positive ("+")		
		Informant 4 change case 14	"... I was not aware this possible effect when we made decision,…" " Whether we repeat a type of change will totally depend on the market situation."	Neutral ("+-")		

Theme & Proposition	Interview Questions	Interview Informant Change Event	Direct Quote Example	Code for operational Criteria	Theoretical Concepts	Other support
Theme 2 Proposition 2	Interview question 11,12, 13,14	Informant 11 Change case 3 – Incohesion material product expansion	*" There is a big difference on change consequences whether the product is relating with previous one. For instance, some customer inquired us that they were interested in one kind of filter material which possible could be with infinity length and without glue in order for wider market niche (means similar product series, but new technology),… they promised the potential order if the product can satisfy their criteria… They were our existing customers with good credits, what we need to do was trying to solve the technical problems."*	Different Domain of technology ("D"); Similar domain of target clients and similar product series ("S"):	Related diversification	Company documents
		Informant 2 Change case 8 – Horizontal and vertial respirator expansion	*"The exploration of horizontal and vertical model based on the previous compounded model…" "horizontal and vertical style was accepted by our exist customer very soon, … since it has similar proc standard and market rule and we are familiar with it."*	Similar domain of target clients, similar product series and technology ("S"):	Related diversification	For example, The company document showed that from CE product standard test reports, the testing to the horizontal and vertical model was based on the testing result of the moulded model, the new certificate was achieved quicker.
		Informant 5 Change case 1- Disposable dust mask product expansion	*" It was harder and bore more risks when we have to deal a product that need to explore new customer, in totally new market than one of these dimensions."* *"… the dust masks was a totally different product to*	Different domain of target clients and different product series ("D");	Unrelated diversification	

			us at that time, *new production machines, new testing facilities, new processing method, new workers, new market rule,… although the previous penetration test technology can help. It was a long adjustment processes, we suffered losses…"* (For change type I-IV model, it was concluded from the results of coding for organizational characteristics, it is shown in the table below)	Similar filtration technology ("S");		

Theme & Proposition	Interview Questions	Interview Informant Change Event	Direct Quote Example	Code for operational Criteria	Theoretical Concepts	Other support
Theme 3 Proposition 3	Interview question 15, 17, 19, 22	Informant 17 Change case 14- Plant expansion four	Direct quote for the instant outcome and long term outcome of change, *"It was a hard time for everyone. It was a big investment, very limited flow capital was left for our normal production. Everything is unfamiliar to us, new location, new facilities, new workers... I remember that a lot of things were out of control, we could not produce normally, there was no profit for quite a periods of time, and we wondered whether this decision was right at that time."*	Harmful evaluation for instant effect of change ("-")	Dynamic change consequences on performance: immediate harmful effect indicated by inertia; And if considering the environment adjustment, and if the gain from the new engagement was more than the loss during the restructuring process, it may benefit organizations.	The result of primary evaluation which used the technique of frequency counting to seek the dominated evaluation, was validated with the result of financial performance measurement model: two times assessments after change by three financial variables – branch turnover, net income and the growth rate.
		Informant 3 Change case 6- plant expansion one	*" We expanded the workshop several times, ... It was hard to go through those moving and adjustment periods, but now we can say these decision were right. ...It demonstrated our production capacity and increased our credits, the customers trust us as long as they visit our sites, many customers are long term customers and keep regular order with us. That is one of the important reasons that we could still keep normal production during the global*	Benefit evaluation for long term effect of change ("+")		

			financial crisis in 2008."			
Proposition 4	Interview question 16, 20,21,23		Direct quote for pre-change performance and the relations between pre-change condition with after change. *"No matter the financial performance is bad or good, if we think it is a good market opportunity, we will go for it."*			
		Informant 5 Change case 1,5,6,8		Negative evaluations	There is an interaction between change and	Proposition 4 was not supported by the result of financial
		Informant 1 Change case 1, 2,4,6,10,11,12,14,15	*"I do not think there is a certain relationship between pre-change condition and the possibility of change,..."*	The majority of the informants did not agree the relationship	organizational performance. Poor performance acts as catalyst to change;	performance measurement model as well. The re-estimated model
		Informant 22 Change case 3,7,9	*" I did not see the performance was simply reversed after the change case. I think this relationship probably talks about the situation at the macro-level instead of organisational level."*	between pre-change condition with the possibility of initiating change, And did not agree there was a reverse	Change outcome is moderated by performance before the change, and affected by regression	suggested the similar result.
		Informant 16 Change case 5,8,12	*" I think the change effect is mainly decided by whether the strategic decision is made at the right time to react to market opportunity, and whether we have enough capability to implement it in time..."*	situation before and after change.	toward its unique mean.	

Theme & Proposition	Interview Questions	Interview Informant Change Event	Direct Quote Example	Code for operational Criteria	Theoretical Concepts	Other support
Theme 4 Proposition 5	Interview question 24, 26,29,32,33,37,38,39	Informant 12 Change case 11- T/C, cotton uniform product expansion	*"When we hired new workers for the sewing workshop, the new workers moved into same accommodation building where old workers from other workshops living. They communicated about their pay rate (they pay the worker by counting pieces they did). As sewing skills are harder to grasp than the processing works of the respirator workshop, the workers in the sewing workshop earned less than the other workshops. Our worker kept flowing to other workshops, we had difficulty controlling this and getting stable labours. Moveover, the workers in other workshops who did something wrong did not care to be corrected, they thought they could transfer to the sewing workshop as backup… we tried to adjust the rules and regulations to prevent this happening* for a long time…*	Relations among units are unsettle or broken/cooperation issues; Extend the change process	Organisational intricacy Intricacy lengthen the change length	It was supported by the company documents: It showed that they spent quiet a period of time solving he unsettled relationship between workshops. There were several company meeting to discuss the issues relating to the balance of new and old technical workers, positions arrangements, and issues regarding a fair payment rate among workshops.
	Interview question 24,25,32	Informant 23 Change case 11 – T/C, cotton work uniform product	*"When we asked for support from other departments during the period of workshop setting up, they always had an excuse to put if off. For example, there were in total two technical workers who were responsible for the boiler maintenance, when we installed the steam boiler in our workshop,*	Latency; Relations among units are unsettle; And the effect of making the	Viscosity Intricacy, and their effect made the change	It was consistent with the record of participation observation, for instance, no sales manager wanted to be responsible for new product when it was launched, it took long time to

		expansion	*they put off coming for two days and said they have to guarantee the normal production of main workshops as their priority…"*	change longer	longer	become familiar with the technology of new product by sales people.
Interview question 24,27,37,40,41	Informant 6 Change case 13 – top leader succession in the FZ factory		" *We had to continue to change the manager several times after the first one left, … the new leader did not fit into the company, and the workers did not like him and did not obey his new rules…"*	Cultural resistance; And the effect on change process	Asperity and the effect of asperity extended change length	The effect of asperity was obvious to the researcher through observation, based on some employees' discussion: one new rules was introduced, but it was only executed by part of staff about two months. The employees resisted this new rule since they thought it brought them a greater workload.
Interview question 24,27,28,30,44,45	Informant 8 Change case 5- Compounded respirator product expansion		"*We did not think there would be a problem of the filtration efficiency at the finished model, the filtration specification was no problem when we tested the fabric, however, the test to the finished sample showed that the efficiency was very bad after we hot-melted three play of fabric together. The result rejected our previous processing methods, and made us to have to look for new facilities. But the direct processing machine was unavailable in the market at that time…"*	surprise / limited foresight/ unexpected story/ violation unforeseen; The effect of opacity on change process	Opacity The effect of opacity made change longer	The observation record showed: the manager directly involved told the author they did not expect that the testing result of the technology data was not stable for a period of time, there was a huge waste of raw material, the cost increased a lot and the quality was not satisfactory.
Interview	Informant 2		*"Of course, shorter, better. Long process of reorganizing influences not only the outcome of the*	The relations	Negative	The primary evaluation to the effect of

	question 34,35,38,42,43,44,46	Change case 5 – Compounded respirator product expansion	*new project, but also influences our previous products…" " It distracted our attention from our main product…"*	between change length and change outcome	effect of change length on change consequence	change length on change outcome was validated by the financial performance measurement, the result did not show clear evidence to support it, neither did the re-estimated model.

Propositi on 6	Interview question 30,31,36,37,38	Informant 19 Change case 8 – Horizontal and vertical compounded respirator product expanion	*" The new French standard is up to 99% against solid and liquid aerosols (most of manufacturers design the new model to reach this standard). Normally higher filtration efficiency would cause higher breathing resistance. We decided to enlarge the effective filtration area of this model (adjusted the existing model), and passed the test successfully. At the same time, we assisted Aearo (A US company) to achieve a patent in the US by developing our model into a pleated style to better solve this problem."*	Flexibility	Ambidexteri ty combing the characteristi cs of flexibility and efficiency It indicated the possibility of a positive impact of the change process.	The company document showed that from CE product standard test reports, the testing to the horizontal and vertical model was based on the testing result of the moulded model, the new certificate was achieved quicker.
	Interview question 24,27,44	Informant 2 Same case as above	*" the horizontal and vertical style was accepted by our existing customer very soon and was getting even more popular… It was quicker than we expected."*	Efficiency (Both flexibility and efficiency were identified in one change case, the possibility of ambidexterity was coded in the process of that change case		

As mentioned earlier, the researcher is aware that if only multiple sources of data are used, separate analyses and comparison of results from each set of analysis is not convergence of evidence. Triangulation of the data means the facts or events should be supported by more than a single source of data. This analysis process is applied to all three data sources: interview transcripts, company documentation and observation notes. The elements and criteria coded from more than one data source from several change cases are recorded to compare with the results of more change cases and finally to test the propositions.

Once the preliminary analyses have been completed from all the various data sets, the themes and concepts of this study are identified, the analysis and initial propositions generated in this study are redefined to be tested (Eisenhardt and Martin, 2000). The examination of initial theoretical propositions is assisted by comparing at least a pair of similar type of change events, listing and categorising the similarities and differences between each pair of changes, to see if the data support or reject the proposed relationships generated from the theoretical arguments of both organizational ecology and adaptation theory camps. The similar replication logic is made between change cases. This subgroup analysis can raise the possibility of typology of individual cases and can be highly insightful. The data and proposition are interacted continuously, the insight helps to refine the literature arguments, redefine the propositions, while the theory sharpens the data organising and any emerging information resolution. The research process has a circular nature. If only a deductive analysis process is adopted, the proposition can fit the evidence but cannot explain the cases perfectly (Sutton and Staw, 1995).

However, if some aspects of change process are better explained only by organizational adaptation theory or ecological theory, simultaneous alternative pattern of predicted value has not been found, strong causal inference can be made by rival explanations of pattern matching for change processes and consequences on performance under that context (Yin, 2009). Comparisons to rival explanations from change processes and

threats to internal validity are made within each change event. The more a rival interpretation can be addressed by case replication, the greater the confidence in the findings of the study can be. Yin (2009) proposes that this type of pattern matching can be done either in a single case or multi cases.

Finally, the logic linking between the data and propositions is made, and the criteria for interpreting the data will be discussed in analysis chapter in this study. The chain of evidence that the case study database, specific evidence sources, propositions, research questions and conclusion, are connected and maintained as shown in Appendix XII. This allows other researchers to follow and trace the connection of any evidence to the initial research question and reach the same conclusions. All evidence is combined to examine the propositions and cover the research question.

Overall, a clear analysis strategy and technique can make the entire argument more powerful and persuasive. The analysis strategy of this study relies on theoretical propositions generated from rival theories, developing the case database, categorising, coding and recoding interacted with propositions predications. It aims to determine the best ways to contrast any differences sharply and to develop theoretical explanations (Yin, 2009).

4.12 Validity

There are four criteria summarised from numerous books to test the quality of research design: 1) construct validity; 2) internal validity; 3) external validity; 4) reliability (Yin, 2009). First, construct validity is defined as the correct operational measures for the concept being studied. In this study, the author cites the concepts according to the published studies based on comparing the objectives of the studies. The selection of operational measurement[23] is based on the discussion of various measurements in prior popular research. The limitation of measurements is acknowledged and efforts made to conquer said limitation. And the construct validity can be further insured by the

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[23] More operationalised measurement is discussed in analysis chapter.

multiple sources of evidence from interviews, documentation, and observation through the data convergence triangulation.

Internal validity concerns the explanatory case studies dealing with the other possible factors which could also lead to the same consequences. Those factors influence the validity of the causal links and pose a threat to internal validity (Yin, 2009). The possible plausible explanation to the major concern of this study - change effect on performance – has been fully considered and discussed in the section on performance measurement and the data analysis chapter. The author is aware of the methodological criticism of performance measurement in prior research, and the corresponding way of avoiding this has been adopted in this study according to theoretical guidance. Historical information and time-series technique are used in the data collection and analysis process to further secure internal validity. It is also enhanced by examining rival theories and pattern matching techniques, deliberately building the explanation from several sources of evidence by logically replicating change cases in this study.

This study aims to represent a critical case to test a well formulated theory, in order to confirm, challenge or extend the theory under this specific research context. It less emphasizes on wider generalisation, however it is generalisable to the organisations in the safety and filtration industry which were founded at the similar time as the case organization. The theoretical orientation is the main vehicle of external validity for this study. The proper theory arguments and development of this study not only facilitate the data collection stage, but also favour the generalisation of the case study results, which is called 'analytic generalisation' (Yin, 2009: P38). This case study does not depend on the number of sample cases or sample size (Yin, 2009). It aims toward 'analytic generalisation' instead of 'statistical generalisation'. Analytic generalisation is regarded as 'Level Two inference', no matter if there is one case or there are several cases (Yin, 2009: P39). Compared to the statistical generalisation coming from empirical data collected from universe samples, which mainly depends upon the sample size and internal variation of the universe, the case adopted in this research is not 'sampling units'. However, the logic of replication can be claimed in this study in that 15 change

events as embedded analysis units are shown to support or not support the theory. Direct comparative case studies with change cases as embedded design by an in-depth multi-level approach is unlikely to be achieved within the time allowance of a doctoral study, and the consent from other organisations in this industry for comprehensive data collection is not likely to be made. It is suggested that 'the previous developed theories are used as a template with which to compare the empirical results of the case study' (Yin, 2009: P38). This study considers the discussions in two major organizational theoretical camps without assuming either one is better able to predict than the other. If the result of the case study supports it but does not support an equally plausible rival one, theory can be considered more potent under this research context.

Moreover, the case organisation is a representative and typical case, as mentioned earlier, and accords with the rationale of a single case approach. It was established in 1980's, in the first generation of this industry in China, went through all the dramatic regulation changes in this industry and economic recession, and it was one of few existing manufactures in this industry of China. The change events selected from case organisation were typical change cases reflecting the whole industry situation at that time. In addition, this industry has never been touched by the organisational change studies before as far as we know, this study is a path finding study, the author of this study had about eight years of experience in this industry, attended about thirty professional international and domestic workshops and exhibitions in this industry; had direct and indirect relations with the majority of major players in the core niche of this industry as previous suppliers and customers of case organization; All of these above information accumulated through years helps a lot to formulate the background of this research context, benefits the data collection and analysis process, and increases the validity of this study.

Overall, this study has internal and external validity, and it is generalized to the organizations in the safety and filtration industry which are founded at the similar time as the case organization. The reliability is discussed next.

4.13 Reliability

Reliability means that the study can be repeated and the same result can be achieved, in order to minimise the bias of the study (Yin, 2009). The author is aware that the case study is one of the hardest types of research due to the absence of specific routines and procedures. Thus, the case study protocol is designed as a major way to increase the reliability. It includes information about the research objectives, relevant readings, documented field procedures, case study questions, the outline of the case database, the method of case database completion, the format and the sources of data. All the relevant data collected are stored in hierarchical structures assisted by Nvivo software step-by-step according to research protocol, with the evidence sources clearly marked. Detailed discussions relating to the linkage between the data and propositions are made in the analysis section, and the criteria for interpreting the data are presented in the analysis chapter in this study. As mentioned earlier, the chain of evidence that the case study database, specific evidence sources, propositions, research questions and conclusion are connected and maintained as shown in Appendix XII. The themes of this study intercorrelate, which allow other researchers to follow and trace the derivation of any evidence to the initial research question and reach the same conclusions. All evidence is combined to examine the propositions and cover the research question.

The reliability of a measure indicates 'the extent to which it is without bias or error free and hence ensures consistent measurement across time and across the various items in the instrument' (Sekaran, 2003: P203). It is suggested that reliability concerns subject or participant reliability relating with participants' enthusiasm, participant bias, observer's error which is related to the fact that the participants might only say what the managers ask them to say, and observer's bias (Robson, 2002). As presented earlier, the bias of participants could be overcome by applying the convergence from multiple sources of data; the criticism to observers can be potentially overcome by the possibility of replication of data collection procedure in this study. The details procedure can be traced by the research protocol and the document of research themes and

intercorrelations. Moreover, following the advice of Al-Alawi *et al.*, (2007), the interview questions are replicated in several alternative means when asked, to increase the possibility of replication and reliability of this study.

4.14 Ethical Issues

This research is intended to benefit the organisation and not to harm it (Milgram, 1963). So the data collection procedure is very formal and has been checked according to the guideline supplied by Durham Business School. 'The Research Ethics Review Checklist' and 'Process flow chart' have been completed and handed into the doctoral office.

The names of the case company and the informants are kept confidential as required. The case company name is only shown as HDHY in this paper. All document files the author obtained from the company are listed, some were allowed to be copied, and some were signed with a promise of confidentiality except for research purposes. The letter to the case organisation to request research access was signed by the supervisor and is shown in Appendix II. The preparation for interview data collection lasted for several months, while making appointments, obtaining informed consent letters with signatures for interviews and tape-recordings, and promising the informants that all data is to be used purely for research. The interview schedule was sent out to all possible informants before the date of appointment with flexible appointment choices. No vulnerable adults were involved in this study.

All references are clearly marked with the writers' names and dates of the articles, and all are noted in the reference list, assisted by Endnote software. Secondary data comes from the public domain. None applicable to other access and research activity rules therein.

4.15 Limitation

The approach of this research falls into the qualitative camp. Consequently, the disadvantages of the qualitative method may be apparent in this study. The first problem is generalisability and limited applicability. The case study focuses on a single organisation in the safety and filtration industry in China. Although a thorough and in-depth research design was planned according to the aims of this study, and achieves analytic generalisation instead of statistical generalisation, if more firms were to be studied over a longer period, stronger relations could be found. Moreover, the industry context is unique, and the extents of these analyses are peculiar to some degree. They may not be generalisable to other populations. They are only certain to be valid within this specific scenario, and at best to generalize to other similar identical settings. (Sekaran, 2003).

Secondly, more fine-grained macro perspective data from the safety and filtration industry in China is possibly helpful, i.e. the fluctuation of market price of this industry. Measuring the effect of regression toward the market mean is suggested by previous studies to prevent bias in the estimate of the main effect of change (Greve, 1999). However since the industry has relatively recently emerged in China, systematic data from this industry is unlikely to be found. Data were obtained on the performance before and after change, the organisation's unique mean, the trends of increase rate in case organisation, as well as the national GDP increase rate.

Thirdly, although this study examines several valuable elements in organizational change studies, the structural inertia model includes the importance of organizational age, size and hazard of mortality variables. However, excepting the reasons we mentioned in the literature chapter, the organisations in the safety and filtration industry in China are relatively small and young compared to companies from other countries in this industry. Also due to the unavailability of data of this industry in China, the quantitative approach is unlikely to be achieved for solving the issue of omitted age, size and mortality variables, nor can they be examined in one single doctoral research.

Fourthly, as a member of the case organisation, the author may be too emotionally involved in the research process (Saunders et al., 2003), thus leading to the possibility of bias. However the benefits to data collection and data analysis as mentioned earlier are greater than the potential bias and could be further improved by multi-data sources and historical information of case organisation.

4.16 Summary from Methodology Chapter

Considering the purpose of this research, this chapter critically examines the logic of the methodological approach, evaluates the different research methods, presents a clear study design based on the theory guidance. It also supplies the industry description introduces the case organisation, and explains why this industry and this case organisation were chosen. It helps to present a clear big picture of the research context. It describes why subunit change cases were selected, indicates how each change event is analysed, how the propositions are supported for the validity of whole study. The extent and path for achieving the logic of replication is indicated. The detailed data collection methods and analysis plan have been fully examined. Finally, the quality of the research design in this study is evaluated by criticism of data validity and reliability. The ethical issue and limitations of this study are discussed in this chapter.

CHAPTER FIVE

DATA ANALYSIS: THE EFFECT OF MODIFICATION INERTIA, NICHE EXPANSION AND DYNAMIC CHANGE ON PERFORMANCE

5.1   Introduction

The previous chapter discussed the proposed research design and outlined the methods for data collection. This chapter presents the analytical part of the study. The study is a qualitative case study, with most information derived from interviews, observation, and company documents.

Analyzing qualitative evidence is especially difficult, because of the lack of well defined techniques and analytical paths (Yin, 2009). Although there is not a clear-cut approach for analysing qualitative data (as there is for quantitative studies), it is important to define a general analytic strategy and the priorities for what to analyse and why (Bryman and Bell, 2003). Following theoretical guidance and examples from previous organisational studies, 15 organisational change events are investigated in three branches of the case organisation in this study. The researcher relies on the theoretical proposition, developing case evaluations by examining theoretical explanations and primary evidences to analyse the rich data about those events (Yin, 2009). The analysis techniques involve explanation building, time series analysis, pattern matching and cross case synthesis. It is supported by Yin (2009), who argues that the theoretical propositions stemming from 'how' and 'why' questions can be extremely useful in organizing the analysis and defining alternative explanations to be examined.

This chapter investigates the first four propositions of this study regarding several dimensions of the content of change and their effects.

5.2 Data Analysis: The Operational Design

Considering there are no formulas or recipes for analysing qualitative data (Yin,1994), prior research agrees that some kind of abstract sense should be encountered during the observation and interviewing phase (Saunders et al., 2007). The data analysis process begins during the preliminary data collection phase. As mentioned in the methodology chapter, in order to cover valuable and typical change events, and to avoid overlapping change processes, the qualified 15 change cases were chosen to reflect four main kinds of change: niche expansion, product deletion, plant expansion and top leader succession. These are all common objects of study in previous organisational change research. The 15 change cases are deliberately selected and at least two change events of the same type within a sub-group were chosen to achieve replication. Each change case is covered by at least three informants.

In order to structure and analyse the data into meaningful units (Rubin and Rubin, 1995), the transcripts of 34 interviews with 25 informants were carefully reviewed and organized, together with observation notes and company documentation. An inductive approach to data analysis was used (Partington, 2000). The coding scheme emerged from the data organizing process. The author made assessments about the level of the interview questions and the characteristics of the responses. The data was subsequently coded into three categories: 1) the focus of activities in the change events; 2) cross units characteristics; 3) the relevant themes and concepts. They are not hierarchical categories but represent the data in two different ways. The data in the first and second categories were coded according to 15 change events and four main kinds of change classification. For example, the niche expansion change type includes Change Cases One, Three, Five, Eight, Nine, Ten and Eleven. The factors relating to the activities of one specific change case were coded in the first category, the factors relating to general characteristics for

the entire study are in the cross-units category, such as the factors relating to the organisational culture. Moreover, the coding process resulted in instances where activities, descriptions, or observation notes could be coded in more than one way, if they suggest significance in more than one way to the research questions, e.g. 'a routine of change' may also reflect 'organisational characteristics'.

In the meantime, the themes and concepts were generated iteratively. Data collecting, interviews transcribing, and writing the observation notes and organizing company documents, are an explanation building process. As mentioned in the methodology chapter, the initial finding of the themes and concepts of the first several cases were compared with the theoretical arguments and the initial proposition, and the literature readjustment and revision of the proposition statement were comparing with more data evidence. The results were then compared with other details of cases against the revision, and the revision compared with the facts of more change cases (Yin, 2009). This process was repeated as many times as necessary, until the themes and concepts became apparent, and importantly, were seen to test the propositions and answer the questions of this thesis. The themes were categorized in four areas as following:

1. Repetition of types of organisational change;
2. Organisational change distances and their effects on performance;
3. Dynamic performance change under external environmental variation;
4. Change length effect and company characteristics;

This process was time consuming, but it was necessary for increasing the reliability of the findings and decreasing the subjectivity of the researcher, to ensure the different themes and concepts could not be excluded in the analysis process. Moreover, in order to ensure the themes and concepts concluded here accurately represented the collected data, and assure that the "research design, any part thereof, and any data resulting from them represent variations in real phenomena rather than the extraneous circumstances of measurement, the hidden idiosyncrasies of individual analysts, and surreptitious biases of a procedure" (Krippendorff, 1980: P129), the author asked one business manager

who has research experience and one business lecturer in a Chinese university, who know this research context and helped the transcripts' translation from Chinese to English for this study, as mentioned earlier, to give their opinions to the themes and concepts, aiming to increase the degree of reproducibility of 'which a process can be recreated under varying circumstances, at different locations, using different coders' (Krippendorff, 1980: P131).

The result showed that the points of uncertainty among the three researchers were concerned with the 'unexpected story', different names of organisational characteristics and classifying of some external factors. As an example of an 'unexpected story', a middle manager proposed one change activity relating to a change in the company's regulations: based on the time the change happened and the informants' transcripts, the three researchers all agreed that it was a part of a cascading change resulting from one plant expansion. Another example concerned different names for organisational characteristics. A production manager mentioned "latency" during the implementation stage. Two researchers agreed that it was the criteria for organisational "viscosity"; the other researcher was not sure and argued that latency was also possibly due to some external reason rather than structural viscosity. After the author introduced the theory discussion, all three researchers agreed that this criterion was coded as viscosity as well as simultaneously an external condition. A final example concerned the external factors, such as government intervention, policy change, and disease spread etc. After a discussion, also according to the literature guidance, the three researchers agreed that they were allocated to a group called "external environment variation", a broad heading that included different external change activities and periods, as it was unlikely all possible external elements could be considered distinct for the purpose of this study.

In addition to the coding of the data into categories, and the identification of themes and activities, a brief description of the organisational change events and the context of major external environmental variation [24] was undertaken as another method of explanation building in order to identify how the environment influenced the change's

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[24] The outline of change events description is presented in Appendix I.

effect on performance.

5.2.1 Measurement of Previous Change Experiences

After defining the themes and concepts of this research emerging from interview transcripts, observation note and company documents, in order to test Proposition 1 and answer the research question, an evaluation of the effect of previous change experiences was undertaken. This stage investigated the effect of previous change type on the likelihood of re-adoption of the same type of change in the future. As mentioned earlier, this study deliberately chose reasonable numbers but typical change events by four main kinds of changes: niche expansion, products deletion, plant expansion and top leader succession. Previous studies argued that various organizational changes were not homogeneous but have different causes and effects (Amburgey et al., 1993). In this study, the effect of each particular type of change is going to be examined separately, with the purpose to assess the homogeneity across the cases. However it is unlikely to construct the distinct independent and dependent variables for each.

This study considered the managers' points of view and their experiences with previous changes and prediction of change. Following the work of Sekaran (2003), based on the transcriptions relating to each change case from fifteen top managers and middle managers, as well as ten general members of staff, their detailed responses of general descriptions of change cases were tabulated according to the advantages and disadvantages of change. Then frequency counts were obtained based on these tabulations. Following the techniques of Miller (1990) and Obeidat (2008), the positive and negative opinions of the effect of previous change experiences were summarized. A plus (+) sign was used when each manager had a positive opinion, i.e. when, for example, he/she repeated the same type of change in the past or would adopt this kind of change again in the future. A minus (-) sign was used for people with a negative opinion. Both signs (+-) were used when opinions were uncertain. Consequently, it was possible to obtain the mean effect of previous change experiences on the likelihood of re-adopting the same type of change in the future for each change case examined in this

study. Finally, it was possible to test whether "modification routines" explained organizational change by looking at the final mean effect of these fifteen change cases in three branches of the case organization. The details will be supplied later in this chapter.

Furthermore, this result was checked against company documents by simply counting the cumulative number of each type of change made in the past in three branches of the organization. The cumulative number of prior changes were used to test whether it has a positive effect on the readoption of the same type of change (Amburgey et al., 1993). Direct measures of changes to internal routines were made. This sub-theoretical model demonstrated that it is important to capture the organisational historical information to test organisational change, and adds benefits for fuller understanding. The time series historical information offered evidence to demonstrate that the change type happened in an earlier period and could be compared with the changes in the later life span, and indicated the effect of elapsed time from the last change.

5.2.2   Defining the Extent of Product Expansion and the Characteristics of Change Cases

This study attempts to test the effect of various niche expansion distances. Seven product expansion changes cases were examined. To test Proposition 2, in order to cover different level of niche expansion, a qualitative assessment was made about the degree to which the new products were related to an existing domain. Following the techniques of Haveman (1992), this study defined changes according to three dimensions: clients, products and technology. It then concluded that the change involved no diversification, related diversification or unrelated diversification.

Hannan et al., (2007) argued that the organisational niche should be characterized by the resources that 'the organizations have the capacity to procure and aim to exploit if there were no competitor, rather than set of resources' (Baum and Singh, 1994: P355). Technology is a key powerful indicator for assessing the overall company strategy and

market position (Dobrev et al., 2003). Agreeing with previous work, here the technological niche width is defined as the manufacturing processing methods. The relatedness of products is measured by whether they are within the same range of product series. The customer is assessed by whether they target a similar group of customers. Consequently, seven niche expansion change cases were assessed by informants in terms of three categories for each dimension. In each dimension: 1.) If the response was that the new product was different from the original domain, mark 'D' was given; 2.) If the response was that the new product was in the original domain, mark 'S' was given. The majority result was adopted from the responses in each category. Based on the similarity of three dimensions of domain, if the assessment of a new product was with two 'D' or over, this new product was regarded as 'Unrelated' diversification.

This result was further tested against the model proposed by Hannan *et al.*, (2007). In this paper, seven change cases were simultaneously categorized into four types of niche expansion: Type I - continuous expansion; Type II - distant expansion; Type III - gap creating continuous expansion, and Type IV - gap creating distant expansion, with the purpose to better illustrate the different distances of niche expansions. In order to do that, an evaluation of the characteristic of each change case was undertaken; frequency analysis was adopted to see which of the elements had the most frequency within and across the cases, so that the most valuable characteristics across the interviews could be identified. Following prior research and consultation with the researcher's supervisors, the elements which were mentioned by more than one informant were chosen to be included in the data analysis for examining the propositions and answering the research question. The different elements and concepts, which were only mentioned once across all the interviews, and did not find obvious support from company documents and observation records, were not included in the analysis. For example, the management characteristic "manager's tenure", which was only talked by one manager was excluded.

Consequently, nine criteria for the characteristics of change were identified from the interview responses. They were cultural resistance, surprise/ unanticipated story/ limited foresight/ violation unforeseen, complexity/ relations among units are unsettlement or

broken (cooperation issues), latency, flexibility, efficiency, size (big or small) and age (new or old). In accordance with the expected results, these criteria were coded based on prior theories corresponding to asperity (cultural resistance), opacity (surprise/ unanticipated story/ limited foresight/ unforeseen violation), intricacy (complexity/relations among units are unsettled or broken (cooperation issues)), viscosity (latency), ambidexterity (combining flexible and efficiency capabilities), size (big or small) and age (new or old) (Amburgey et al., 1993; Barnett & Carroll, 1995; Greve, 1998; Hannan et al., 2007; Hannan et al., 2003a, 2003b; Haveman, 1992; O'Reilly & Tushman, 2008). During the primary evaluation process, some indicators were given. For example, viscosity, which is associated with latency, can be measured by clocking the time it takes for the related department to react to the change decision. If the staff is unhappy, it indicates asperity. If the intensity of reaction was homogeneous, it indicates a strong culture. The author further asked each informant to assess the cultural strength of their own company in comparison with five other firms in the industry which they are familiar with. Indicators for strong culture were supplied as: a.) the company has been managed according to longstanding policies and practices; b.) the company makes its value known through a creed and makes a serious attempt to urge the managers to follow; c.) managers speak their company style or doing things commonly (Kotter and Heskett, 1992).

The last two criteria – size and age - were mentioned more than once from interview responses, and they were considered important in organisational change theories. However, as mentioned in previous chapter of this study, they were supported by the contradictory theories, both based on sensible empirical studies. Also because this study aims to explore the in-depth descriptive evidence in one specific context, age and size variables are neither in the research extent of this study, nor can be solved by the capability of a single doctoral student. Finally, five change characteristics were identified by twenty-five informants, thirty-four interviews, and observation notes. They were asperity, opacity, intricacy, viscosity, and ambidexterity, which were measured correspondingly by the criteria of cultural resistance, surprise/violation unforeseen/ limited foresight/ unanticipated story, relations among units are broken or unsettled

(cooperation issues) / complexity, latency, flexibility and efficiency. For more clarity, all the theoretical definitions and operationalization criteria, related to the themes and propositions of this study, are represented in Table 5.1 below. The supported articles are included.

Table 5.1: Operationalization Definitions and Constructs

Themes & Propositions	Concepts	Definitions/Clarifications	Operational Criteria /Techniques	Supported articles
Organisational change type's repeating experience; (Proposition 1)	The broader implication of inertia theory - modification routine	The more experience organizations have in changing operating routines, the more likely a modification routine is to develop. The type of change made in the past is especially likely to be repeated in the future.	From the informants' points of view, frequency counts was undertaken to their previous experience of change repeating and their preference to repeat a type of change in the future, relating with each change event, to obtain the dominant effect. It was validated by company documents.	Amburgey et al., (1993); Feldman and Pentland (2003); Feldman (2000); Miller (1990)

Themes & Propositions	Concepts	Definitions/Clarifications	Operational Criteria /Techniques	Supported articles
Organisational change distances and their various effects on performance; (Proposition 2)	Niche expansion model	Change Type definitions: Type I - Continuous expansion: "a niche expansion is continuous if the number of cavities in the niche is the same before and after the expansion. An expansion is continuous only if it adds social positions to the niche on the edge of the ex-ante niche." "This type of niche expansion does not usually imply architectural change." Type II - Distant expansion: "a niche expansion is distant if the positions added to the earlier niche are separated from the earlier niche by a cavity." "If the expansion is of type II,… adding new units might increase the opacity;… under some circumstances, adding units does not increase the intricacy."	No obvious opacity, asperity and intricacy; (The definitions and constructs for organisational characteristics are shown in this table later) There is opacity, but no intricacy;	Hannan et al., (2007, P282- P284); Greve (1999);

		Type III – Gap creating continuous expansion: "another type of expansion is that continuous in that positions are added on the edge of the previously existent niche. However, the principle of allocation predicts that the total appeal and engagement are fixed, so adding positions to the ex-ante niche lowers the engagement or the appeal at some positions that belonged to the earlier niche. The lowered engagement might turn out to be zero, in which case a gap emerges in the previous existent niche." "The consequences of type III expansion of the niche is increased intricacy…; The more culturally imprinted the organisation is with the engagement at the abandoned positions, the more cultural opposition is triggered by these change."	There are asperity and intricacy;	
		Type IV - Gap creating distant expansion: "this type of expansion is distant because positions are added further away from the previous ex-ante niche. The lowered engagement creates a gap in the previously existent niche." "…asperity, intricacy, and opacity all increase as a consequence of a type –IV expansion.	There are opacity, asperity and intricacy in the change;	
	Diversification model	Diversification is a response to environmental change linked to organisational characteristics, and it must affect organisational structure. Diversification strategy is used to cope with environmental change. Diversification is categorized by related diversification, unrelated diversification and no diversification according to the change distances.	To measure unrelated or related diversification, product expansion change cases are assessed by three dimensions of technology, product, customer. - Technological niche width is defined as the manufacturing processing methods. - The relatedness of products is measured by whether they are within	Dobrev, Tai- Young et al., (2003); Romanelli, (1989); Brittain and Wholey (1990); Rumelt (1982); Amburgey et al.,(1993);

			the same range of product series. - The customer is assessed by whether they target a similar group of customers. 1.) if the response was that the new product was different from the original domain, mark "D" was given; 2.) If it was in the original domain, mark "S" was given. 3.) The majority result was adopted from the response; 4.) Based on the similarity of three dimensions, if it was two "D" or over, this case was regarded as unrelated diversification; Whereas if less than two, then it was in related category. (Please see the overall operational steps for testing Proposition 2 in Section 5.2.2)	
		Unrelated diversification Related diversification		

Themes & Propositions	Concepts	Definitions/Clarifications	Operational Techniques/Criteria	Supported articles
Dynamic change effect on performance considering external environmental variation; Proposition 3	The effect of inertia on change consequence;	The reorientation periods from operating to restructuring lowers the efficiency of operations, the latency of new engagement leads to immediate effect that a decline of performance. But this immediate effect will decrease over time.	- The instant after change consequence was assessed by examining the financial record in 1-6 month after change; - The long term change consequence was assessed by examining the financial record of in 7-12 months after change; - The dynamic change consequences on performance were evaluated by examining the instant change effect and the long-term change effect to capture the dynamic performance variation. - The result from financial record was validated by the evaluation from the informants who experienced the changes and had knowledge of the change effects at every step. Then the frequency counting technique was used to get the mean effect for the instant change effect and the long term change effect from the informants' point of view.	Hannan and Freeman (1989); Hannan et al., (2007); Singh, House et al., (1986); Gersick (1991); Haveman (1992); Greve (1998,1999); Delacroix and Swaminathan, (1991); Dobrev, Tai- Young et al., 2003); Meyer and Scott (1983); Kelly and Amburgey (1991); Barnett (1990); Denis, Lamothe et al., (2001); Boker (1997); Miller and Chen (1994); Greiner (1972); Kotter et al., (1992);
	Relative inertia;	The effect of relative inertia suggested to consider contextual factors，that may have an impact on the consequences of organisational change: such changes should have different consequences under different external conditions.		
	The effect of relative inertia on change consequences on performance;	If an organisation reacts to environmental transformation: 1.) Change will hurt performance since it reset the 'liability of newness' clock; 2.) change will improve performance because it fits the environmental demands, and if the gains from the new engagement more than the losses during the reorganisation process.		

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Proposition 4	Interaction of change and performance	Poor performance acts as catalyst to change; It is the motivation for problem solving; Good performance may lead to inertia and resist change;	Poor pre-change performance is defined to comply two conditions: a.) At least one of two financial variables were lower than before (comparing the financial data of 1–6 months before change, with 7–12 months before change in the branch of change took place); b.) Simultaneously the branch growth rate in a year ahead of the change event was lower than average.	
	Regression towards its unique mean/ dynamic performance changing	The changes maybe on average harmful, but it is moderated by performance before the change, and affected by regression toward the mean. Firms having lower performance than the mean are likely to be followed by higher performance after change. Performance above the mean is likely to be followed by lower performance. Each organization will regress towards its unique mean instead of market mean, because of greater differences in capability and decision making.	To examine this part of Proposition 4, the reverse relation between pre-change condition and after change performance was measured by the trends of the two financial variables in the branch where the change took place, and the growth rate before the change with that after the change. - The trends of two financial variables before the change were defined by comparing the data in 1–6 months ahead of change with the data in 7–12 months ahead of change, in order to capture whether it was increasing or decreasing before the change. - The trends of two financial variables after the change were concluded by comparing the data in 1–6 months after the change with those in 7–12 months after the change, to check whether it was an increasing or decreasing trend. - Consequently, two trends before and after change were both defined by a one year lag, and then they can be compared to check whether there was a reverse situation. - Similarly, the percent growth in turnover for the branch in the	

| | | | year the change took place was obtained, this percentage was then compared with the average annual rate of growth in turnover for the branch of the case organization. Then it was observed whether the speed of development in a year of change was higher or lower than the average development speed.
- We know whether the growth rate one year ahead of change was higher or lower than average from the results of the first part of Proposition 4;
- We can compare these two trends of the growth rate to check whether there was a reverse situation or not before and after change indicated by the branch growth rate.

-Eventually, the performance reverse situation can be checked by comparing the trends of branch turnover, branch net profit and branch growth rate before change with those after change.
- Also the results by this model of assessment were validated by the results of the interview responses. | |

Themes & Propositions	Concepts	Definitions/Clarifications	Operational Techniques/Criteria	Supported articles
The effect of change length and organizational characteristics Proposition 5	Change process Cascading change; Organisational intricacy, viscosity, asperity and opacity	Change process: Change process refers to how change occurs and is implemented. The consequences of change are not only the different of old and new character, but also the cost associated with the disruption caused by the process of change. It was suggested that internal organisational characteristics are important issue when examining the change process. Cascade: Sequence of resolutions of induced violations of organisational architectural codes. The recent inertia theory claim that change process effects result from the length of time of the transformation. The time to complete a change depends on the centrality (intricacy) and connectedness of these units (viscosity) in the organization. And organisational opacity (limited foresight) and asperity (cultural resistance) lengthen the change process.	- An evaluation of the characteristic of change case was undertaken; Frequency analysis was adopted to see which of the elements had the most frequency within and across the cases; - The elements which were mentioned by more than one informant were chosen to be included for examining the propositions; - Eight elements for the characteristics of change were identified from the interview responses; - They were identified and coded as the criteria of five organisational characteristics based on prior theories, they were intricacy, viscosity, opacity, asperity and ambidexterity. - In order to compare the outcomes of changes with different change length, all change cases were categorized into two groups: the change process was long or shorter/ equal to their expectation, according to the time expectation of the people who were involved in the processes. - The dominated performance outcome in each category was concluded from financial record; - The differences in the effect of two categories can be observed; -The result was compared with the primary evaluation and the company record.	Barnett and Carroll (1995); Barnett and Freeman (2001); Hanan et al., (2003a, 2003b, 2007); Baron et al., (2001); Nee and Su (1990); Burgelman (1991); Williamson (1975); Jacobs et al., (2008);

		Intricacy: A strong and complex pattern of interconnections among an organization's component units. Specially, intricacy is the mean of the centralities of the units in the organization.	Intricacy – complexity/ relations among units are unsettle or broken/cooperation issues; It was indicated by conflicts between departments, and interpersonal relations;	
		Viscosity: The expected time it takes for an organisational unit to respond to induced architectural code violations and bring local architecture into code conformity.	Viscosity – latency; It was indicated by clocking the time it took for the related department to react to the change decisions;	
		Asperity: The degree to which an organization's culture restricts its architectural choices.	Asperity – cultural resistance; If the staff was unhappy in the change process, it indicate asperity. And If the intensity of reaction was homogeneous, it indicates a strong culture. The assessment of cultural strength of case organisation in comparison with five other firms in the industry which the informants were familiar with were undertaken; Three indicators for strong culture were supplied.	
		Opacity: An incomplete view of the connections among units of an organization.	Opacity – surprise / limited foresight/ unexpected story/ violation unforeseen; It was indicated by mentioning unanticipated story in the change process.	
			Primary assessments were undertaken for whether these four organizational characteristics lengthen change process.	

Proposition 6	Ambidexterity		The results were validated by company documents and observation.	
		Ambidexterity refers to the ability to simultaneously explore and exploit which enables firm to adapt over time, and acts as a kind of dynamic capabilities, combining the routines, processes and skills required for exploitation and exploration.	Ambidexterity – combing flexibility and efficiency characteristics during change; (It was to test the effect of change process from adaptive view separately, to see the possibility of a positive impact of the change process.)	O'Reilly and Tushman (2008); Teece, Pisano et al., (1997); Eisenhardt and Martin (2000); Teece (2006); Zott (2003); Adner and Helfat (2003); Gulati et al., (2002); Macpherson et al., (2004); Kelly and Amburgey (1991);
		Ambidexterity is also labelled by much literature as a structural characteristic. It claims that efficiency and flexibility do not have to be trade-offs in the change process.	Flexibility was indicated if the original plan was modified flexibly during the implementation process. Efficiency was indicated if the informants mentioned that the process was shorter than they expected. If both flexibility and efficiency were identified in one change case, the possibility of ambidexterity was noted in the process of that change case.	

In order to test Proposition 2, an evaluation of the characteristics of each change case was undertaken. According to the model of Hannan *et al.*, (2007), the main criterion and characteristics for Type I to Type IV were summarized as follows:

Type I: No obvious character of opacity, asperity and intricacy

Type II: Surprise (opacity); no obvious complexity or relations among units are broken or unsettle (intricacy)

Type III: Cultural resistance (cultural asperity); complexity or relations among units are broken or unsettled (intricacy)

Type IV: Surprise (opacity); cultural resistance (cultural asperity); complexity or relations among units are broken or unsettled (intricacy)

Opacity, asperity and intricacy were counted for seven niche expansion types of changes and tested the degree of niche expansion. Then the product expansion change cases can be categorized into four types according to the characteristics of each change type, to define the degree of change distance. We compared the result of change distances by this model with the result of distances from diversification model. Next the author summarized the primary evaluation for the change consequences of those niche expansion changes by interviews, and at the same time to use financial data from company document to evaluate the effect of change on performance in the year of change happened, by three financial criteria: turn over, net profit and growth rate, comparing with the results of interviews (Kotter et al., 1992; Smith et al., 1992; Miller and Chen,1994; Boker, 1997; Singh, House et al., 1986; Haveman, 1992). Eventually, we can compare the performance consequence for each distance of change by using both two models, and analysis the relationship between change distance and change outcome on performance.

Another, all the characteristics summarized here and their effects in the change processes will be further examined against all the change cases in next chapter.

5.2.3 Dynamic Performance Measurement

As mentioned in the literature review, evaluating the performance of an organisation entails considerable ambiguity and tends to attract methodological critiques (Amburgey et al., 1993). However the study of the performance consequences of change is increasing in popularity, and it plays a central role in a variety of theoretical approaches to organizations (Greve, 1999). As we mentioned, the dynamic time effect of performance is ignored in previous studies. Those who study change should examine historical and time varying information, as well as external variation (Sorensen, 2002, Clement, 1994).

Considering the methodological suggestions in prior researches, in order to measure the dynamic change effect on performance to test Proposition 3 and Proposition 4, the financial data records from company documents for change events were traced from 1994 to 2009. The evaluations for the effect of change on performance were obtained from interviews to further validate the results from financial data in this study. The time of change events was presented in months in this thesis. Yin (2009) recommends tracing events over time, which is the major strength of case studies. It supplies a good evidence for testing the propositions, such as the ability to track the dynamic performance before and after a change, and the possibility to check whether a predicted time matches an actual time.

Following the suggestions in Boeker (1997), Greve (1999), Haveman (1992) Miller and Chen (1994) and Singh et al., (1986), as we mentioned earlier, this study uses two financial variables to measure performance: turnover and net profit. Performance is measured at the level of the branch where the event took place. Moreover, considering the high speed of development research context, the growth rate of the branch where the change took place in the year of change was compared to the mean growth rate of the branch. As discussed in the introduction, China is one of world's fastest growing economies. Research validity would be lacking if the researcher ignored this specific

research context. China's GDP growth rate was also compared to the growth rate of the branch of the case organisation to account for the rate of general economic development and inflation in China.

Following the work of Haveman (1992), the changes were assessed over six-month periods for Propositions 3 and 4. As we discussed earlier, the financial data for change effects were assessed four times: 7–12 months before change, 1–6 months before change, 1–6 months after change, and 7–12 months after change (Eisenhardt, 1989, Haveman, 1992). The financial records were available semi-annually in the branches of the case organization, and all changes were assessed over six-month periods between June 1994 and June 2009.

For example, if a change was initiated in March 2002, the performance consequences will be assessed by turnover and net profits of that branch recorded in June 2002 (3 months after change) and December 2002[25] (9 months after change) as the instant performance consequence and the long term change consequence respectively. The pre-change performance will be assessed by the financial records in December 2001 (3 months before change) and June 2001 (9 months before change). And if the change case took place in August 2002, the effect of change will be assessed against the data of December 2002 (4 months after change) and June 2003 (10 months after change) as instant and long term effect; the pre-change condition will be measured by the financial record of June 2002 (2 month before change) compared with the data of December 2001 (8 months before change). Hence, for the data constructed for the analysis of financial performance, some first assessments of performance in selection to a change may be three months long (March, 2002 to June, 2002), while some are four months long (Aug 2002 to Dec, 2002); because it is unlikely to precisely identify the finishing points of each single change. This will not influence the validity of the results of the study as it is assumed that the changes do not consume equally spaced time periods, as indicated by Haveman (1992).

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[25] The original financial data in each December was annual, the data of each December showed in this study that the annual financial record took away the financial record of January–June of those years, which means the financial performance for second half of year (July–December).

In this way, to test Proposition 3, the dynamic change consequences on performance were evaluated by examining the instant change effect (1–6 months after change) and the long-term change effect (7–12 months after change) to capture the dynamic performance variation. Furthermore, the financial data assessments model for change consequences on performance were validated by the evaluation from manager informants who experienced the changes and had knowledge of the change effects at every step. Then the frequency counting technique was used to get the mean effect for the instant change effect and the long term change effect from the managers' point of view.

To examine the first part of Proposition 4 - the role of pre-change conditions in change initiation, the trends of branch turnover and branch net profit in 1–6 months before a change were compared with the data of 7–12 months before a change. Branch growth rate was further used, for this part of testing, branch growth rate is the percent growth in turnover for the branch in the year ahead of change. This percentage increase in then compared with the average annual rate of growth in turnover for the branch of the case organization. Then it can be observed whether the speed of development in a year ahead of change was higher or lower than the average development speed. Poor pre-change performance is defined in this study as when at least one of two financial variables were lower than before (comparing the financial data of 1–6 months before change, with 7–12 months before change), and the growth rate in a year ahead of the change event was lower than average.

To examine the last part of Proposition 4, the reverse relation between pre-change condition and after change performance was assessed. It was measured by the trends of the two financial variables in the branch where the change took place, and the growth rate before the change with that after the change. The trends of two financial variables before the change were defined by comparing the data in 1–6 months ahead of change with the data in 7–12 months ahead of change, in order to capture whether it was increasing or decreasing before the change. The trends of two financial variables after

the change were concluded by comparing the data in 1–6 months after the change with those in 7–12 months after the change, to check whether it was an increasing or decreasing trend. Consequently, two trends before and after change were both defined by a one year lag, and then they can be compared to check whether there was a reverse situation.

Similarly, branch growth rate in the year of change took place was also used. The percent growth in turnover for the branch in the year the change took place was obtained, this percentage was then compared with the average annual rate of growth in turnover for the branch of the case organization. Then it was observed whether the speed of development in a year of change was higher or lower than the average development speed. We know whether the growth rate one year ahead of change was higher or lower than average from the results of the first part of Proposition 4, and so we can assess if the growth rate in the year of change was higher or lower than average, now we can compare these two trends to check whether there was a reverse situation or not before and after change indicated by the branch growth rate.

Eventually, according to regression toward the organisational unique mean, the performance reverse situation predicted in Proposition 4 and can be checked by comparing the trends of branch turnover, branch net profit and branch growth rate before change with those after change. The details examples will be supplied with the numbers explanation. Also the results by this model of assessment were validated by the results of the interview responses.

Finally, by following this operational strategy and the procedures in analysing the qualitative data of this research, any differences were contrasted, comparisons to rival explanations were made, and threats to internal validity were checked within each individual case. A replication logic was applied to the 15 change cases. Consequently, pattern matching could be achieved in relation to the results of the 15 change events, and significant explanations for the outcomes can be developed in this study (Yin, 2009).

The next section will discusses the results from the empirical data regarding the effect of previous change experiences on the likelihood of re-adopting the same type of change in the future, a test of Proposition 1. The section after that will focus on the effect of niche expansion distances on performance for testing Proposition 2. The last section of this chapter will test Proposition 3 and 4 by analysing the relationship between change and the dynamics of performance, which measured by pre-change performance, performance shortly after change, and performance in the longer term. The influences of external environmental variation will also be considered to be examined as Proposition 3 predicted.

5.3 Effect of Previous Organisational Change Experiences on Future Change

As discussed in literature chapter of this study, research very rarely empirically examines structural inertia theory (Hannan et al., 2003b), and almost all organisational research remains principally focused on North America and Europe. Only six articles had the topic on strategic change which looked at Asia context from top ten journals during 1996-2005 (Bruton and Lau, 2008). Thus, the author of this study feels it necessary to attempt to investigate organisational change and examine structured inertia empirically with specific research context which is in safety and filtration industry of China.

This study especially focused on the broader implication of inertia - modification routinization, which are the procedures for creating and changing operating routines (Amburgey et al., 1993). They were identified from thirty four interviews of twenty five informants, and verified by company documentation, in order to examine the effect of previous change experience on the likelihood of readopting the same type of change in the future. Most manager informants have ten to twenty years work experience in this industry. Using the frequency techniques mentioned earlier, the results of interview

responses showed that there were clear signs that informants repeated the same type of change experienced in the past, and would likely to adopt the same type of change in the future. This provided evidence in support of Proposition 1. Moreover, the qualitative data supplied rich descriptions about why the informants re-adopted the same type of change. Although the majority of managers had the experience of re-adopting a similar type of change from the past, some of them were not conscious of the effect of their previous change experience or did not agree that this effect had occurred. The data implied that the degree of the effect of previous change experiences was varied, in accordance with different change performance of previous change case.

Table 5.2 below shows the primary assessment results of the effect of previous change type and the likelihood of readopting the change in the future for fifteen change cases in three branches of the case organization.

Table 5.2: The effect of previous change experience on the likelihood of re-adopting a similar type of change in the future

Change Events	Repeating experience	Prevalence Effect	To repeat / Change prediction	Prevalence Effect
1.) Disposable Nuisance Dust mask product expansion Change Case	(-) (+-) (-) (-) (-) (1, 3, 5, 8, 9)	(-)	(+) (+) (+) (+-) (+-) (1, 3, 5, 8, 9)	(+)
2.) Breast pad product deletion change case	(-) (-) (-) (1,10,11)	(-)	(+) (+) (+-) (1,10,11)	(+)
3.) Incohesion Material product expansion change case	(+) (+) (+-) (+) (+) (+-) (-) (+) (8, 17, 7, 14, 15,11,25, 22)	(+)	(+-) (+-) (+-) (+) (+) (+) (+) (+) (7,11,25,8,17,14,15,22)	(+)
4.) Battery separator product deletion change case	(+) (+) (+) (1,8,9)	(+)	(+) (-) (+) (1,8,9)	(+)

5.) Compounded respirator product expansion change case	(+) (-) (+-) (+-) (-) (-) (-) (2,5,8,10,16,19,25)	(-)	(+) (+) (+) (+-) (+) (+) (+) (2,5,8,10,16,19,25)	(+)
6.) Plant expansion one (main branch)	(-) (-) (-) (-) (-) (-)(-) (1,2,3,5,8,10,14)	(-)	(+) (+) (+-) (+) (+) (+-)(-) (1,2,3,,5,8,10,14)	(+)
7.) Plant expansion two (SJZ branch)	(+) (+) (+) (+) (-) (2,19,20,21,22)	(+)	(+) (+) (+) (+) (+-) (2,19,20,21,22)	(+)
8.) Horizontal and vertical compounded respirator product expansion change case	(+) (-) (-) (+) (+) (+) (+) (+) (2,4,5,8,16,19,24,25)	(+)	(+) (+-) (+) (+) (+) (+) (+-) (+-) (2,4,5,8,16,19,24,25)	(+)
9.) Disposable coverall product expansion change case	(+) (-) (+) (+-) (2,4,11,22)	(+)	(+) (+-) (+-) (+) (2,4,11,22)	(+)
10.) Filter bag product expansion change case	(+) (+) (+) (+) (+-) (+-) (+-) (1,2,3,4,8,11,20)	(+)	(+) (+-) (+-) (+-) (+) (+) (+) (1, 2, 3, 4, 8, 11, 20)	(+)
11.) T/C, Cotton work uniform product expansion change case	(-) (+) (-) (+) (+) (+-) (-) (1,2,3,4,6,12,21,23)		(-) (+) (-) (-) (+-) (+-) (+-) (1,2,3,4,6,12,21,23)	(-)
12.) Plant expansion three (main branch)	(+) (+) (+) (+) (+-) (+) (+) (+-) (+) (+) (1,2,3,7,6,10,11,14,15,16)	(+)	(+) (+) (+-) (+) (+-) (+-) (+) (+-) (+) (+) (1,2,3,7,6,10,11,14,15,16)	(+)
13.) Top leader succession in sewing factory	(-) (-) (-) (+-) (-) (-) (2,6,11,12,21,23)	(-)	(-) (+-) (-) (+) (-) (-) (2,6,11,12,21,23)	(-)
14.) Plant expansion four (SZ branch)	(+) (+-) (+) (+-) (+) (+) (1,4,11,14, 17,18)	(+)	(+) (+-) (+) (-) (+) (+) (1,4,11,14, 17,18)	(+)
15.) Top leader succession (SZ branch)	(+) (+-) (+-) (+-) (1,11,17,18)	(+)	(+-) (+-) (+) (+) (1,11,17,18)	(+)
Total prevalence effect of 15 change Cases:	(+)		(+)	(+)

The number stands for informants, total 25 informants   (+) Positive response
Top managers: Informants 1, 2,3,7, 11,18   (-) Negative response
Middle Managers: Informants 4,5,6,8,9,10, 14,17,19   (+-) Not sure for the effect
Staff: All the rest

The empirical data showed that nine out of fifteen change cases were re-adopted change types, the manager informants had the experience of re-adopting this kind of change case in the past. Managers preferred to readopt thirteen out of fifteen change cases in the future. Looking at the table above and considering the prevalent effect of each single case from the interview responses, the "prevalence effect" of each case was derived from 'repeating experiences' category and 'to repeat in the future/change prediction' category, being ranked as positive (+), negative (-) or neutral (+-).

For example, looking at the result of the first change case (disposable nuisance dust masks product expansion change case), four informants out of five gave negative mark, and commented that it was not a repeated change type. The manager informants had no experience of repeating this kind of change in the past. Thus the prevalence effect was (-). Nevertheless, three of them gave positive mark in the change prediction category and wanted to adopt this type of change in the future. Two responses suggested that whether the managers would use this kind of change again or not will depend on the market condition at that time. Hence, two neutral mark (+-) were given. The positive mark (+) was the prevalence answer for this category of this case. That is to say, this change case was not a repeating change type in the past, but very likely to be readopted in the future. The same method was applied to evaluate the rest of the change cases.

Following the above procedure, it transpired that nine out of 15 change cases had a positive effect in the "repeating experience" category. Change case 11 had an unclear result: equal amount of positive and negative evaluations. The result was that most of change cases were the repeating type of change, or to say the majority of the informants had the experience of readopting similar type of change in the past. The previous change experiences had the effect on readopting of same type of change. In the "to repeat/ change prediction" category, thirteen out of 15 change cases had a positive effect, which means they will be very likely to readopt this similar type of change again in the future. Again, it showed that the previous change experience has the prediction effect on the future change type. A similar type of change is very likely to be predicted to be readopted in the future.

Also, those nine change cases which were evaluated with positive effect in the "repeating experience" category, were neatly evaluated with positive effect again in the " to repeat/ change prediction" category. That is to say, all change cases which were the repeating type of change, were more likely to be readopted in the future again. On the whole, the results showed that the previous type of change is likely to be readopted, the change experiences had the prediction effect on the future type of change. The more experience the organisation with a type of change previously implemented, the greater the likelihood of adopting the same type of change in the future in majority of change cases in the case organisation in safety and filtration industry of China. Hence, the result from this part of the study supported the Proposition 1 of this study, and it matched the view in the work of Amburgey et al., (1993), Hannan and Freeman (1984), Nelson and Winter (1982) and the work of Sorensen and Stuart (2000).

This result was further tested against evidence from company documents and this revealed a high repeat rate of the same type of change in the company's history. There were nine occurrences of product expansions and five occurrences of plant expansions in the case organization. Listed in chronological order, it was also found that the first change case (product expansion), which took place in 1992, which was just three years after the company had been founded at a very early stage in the company's life cycle, was readopted much more than other change types. This showed some support to the broader implication of modification routines, and was consistent with the work of Amburgey *et al.*, (1993) that early occurrence of a given type of change in the life cycle of an organisation increases the probability of subsequent same types of change. Furthermore, the company historical record clearly showed five instances of plant expansions occurring between 2002 and 2008, within six years. This represented five occurrences of the same type of change, all very close to each other, and provides some evidence that the elapsed time since the last change of the same type had the implication to the probability of readopting of a given type of organisational change (Cyert and March, 1963).

In addition, the results from interview transcriptions also show that a proportion of the informants were not conscious of the effect of previous change type experiences, and they did not agree with this relationship. They said whether or not they adopted the same type of change totally depended on the environmental and organisational conditions at that time, as there is so much uncertainty and unforeseen conditions, which are different from those experienced in the past. However, they said that if it were possible, they would consider making those changes again. They commented that the reason for reusing a certain type of change was only because it was appropriate for the market opportunity at that time. If the organisational change decision was dependent on prior experience, this would be a dangerous solution. For example, the filter material production director[26] in HD branch, while discussing the change case 3 - incohesion fabric expansion, said:

"The product expansion decision is according to the market demand. I normally did not think of last change or any of previous changes when we made decision. If some customers give us this inquiry and if we can get enough information to demonstrate that the market need this kind of new product, we will do."

This was supported by several other informants. For example, the purchasing manager[27] in main branch, while discussing the plant expansion cases, stated that:

"The change decision is restricted by many internal and external conditions, it is usually a joint decision by several top managers after a complexity consideration. The environment is changing, ... previous successful change type might not be suitable to be adopted again at this time... "

This part of the results corresponded with the view expressed in the work of Amburgey and Miner (1992), and the work of Nelson and Winter (1982), that generally inertia is viewed as being dangerous.

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[26] This manager represents informant number 7 in the Appendix VII.
[27] This manager represents informant number 4 in the Appendix VII.

The results also showed that some manager informants did have the experience of adopting the same type of change, but they did not realize they did and were not aware of this effect until they were asked. They commented that they might subconsciously prefer to adopt the same type of change. The filter material production director [28] in HD branch, while mentioning the change case 3 of incohesion fabric product expansion, explained:

"Well, I did prefer expanding some new products and seeking new technologies if the market had any opportunities. In this industry, if we stay where we are, we will lose and fail. But I can not say that it was a repeating of same type of change, I just looked for any new development chances for organization."

The purchasing manager[29] in HD branch, while discussing the plant expansion cases, supplemented that:

"...I was not aware this possible effect when we making decision. For example, when we did field acquisition during the plant expansion process, there were some disadvantages to invest such a huge amount of money, we had difficult time to manage to get enough money for raw material purchasing even to secure normal production, and also followed the hard time to adjust workshop etc. However, there were plenty of benefits as well. For instance, the customers' satisfaction increased after visit our factory, it was easier to get the loan from the banks. ... If the organisation has the capacity to expand further, I will suggest to purchase the land again, not only because we did it before."

The general evaluation for fifteen change cases were summarized into two categories as advantages and disadvantages, with the purpose to help the understanding of the context of change cases and assist in testing the propositions of this study. Table 5.3 below

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[28] This manager represents informant number 7 in the Appendix VII.
[29] This manager represents informant number 4 in the Appendix VII.

presented the brief summaries of advantages and disadvantages from the interview transcripts of seven informants who covered the compounded respirator product expansion change case, and the transcripts from nine informants who talked horizontal and vertical model niche expansion case, as an example of the technique used to tabulate the effect of this change case coding from the transcripts. The details for other cases are presented in Appendix XI.

Table 5.3: An example of the tabulation of qualitative data about the effect of 15 change cases

Change Events	Advantages	Disadvantages
7.) Compounded respirator product expansion change case (2,5,8,10,16,19,25)	• With better profit margin; (2,19) • Being high end product; (2,8) • With similar target customer as nuisance dust mask, with less pressure; (2,19) • With higher technology than previous product, with more confidence (2,5,8,25)	• Being not familiar with processing method; (2,5,8) • Long time workshop and facilities adjustment; (5,10) • Long time to reach customers' satisfaction; (2,19) • Product standard certification needed for different continents' market, very expensive and hard to achieve; (2,8,16,25)
8.) Horizontal and vertical compounded respirator product expansion change case (2,4,5,8,13,16,19,24,25)	• More product series to be chosen; (2,5) •More efficient produce process; (2,19) • More attractive product line to customers; (2,19) • With better quality and cost control, with better profits; (4,5,13,24) • More product standard certification achieved; (8,16,25) • With similar target customers; (2,19) • With similar technology; (5,8,24)	• Less order to previous product; (2,19,24) • Workers arrangement problems; (5,10,13,24)
The number stands for informants; 25 Top managers: Informants 1, 2, 3,7,11,18 Middle Managers: Informants 4,5,6,8,9,10, 14,17,19 Staff: All the rest		

When considering the reason why managers re-adopted a similar type of change, using the interview transcripts, some advantages or benefits of those change cases relating to the effect of previous change experiences were identified. For example, while

discussing horizontal and vertical respirator change cases, the benefits of adopting this type of change were summarized as follows: it was an efficient change process, there was less cost for a better profit margin, the risks were low, there was less pressure and more confidence in the new technology as it was a similar type of product expansion as the compounded model change case. This was consistent with the views expressed in the work by Hannan and Freeman (1984) and Sorensen and Stuart (2000), relating to the potential benefits of inertia. On the other hand, the primary data also showed that some disadvantages related to the effect of previous experiences of change. For example, several informants mentioned that they were too sure about what they should do while mentioned plant expansion change cases which had been implemented before. It might lead to ignore any emerging new conditions and opportunities. This corresponded to the findings of Miller & Chen (1994) that managers felt they might miss the new opportunities during the change process.

It was also found that the effect of previous change types varied along with the extent of change. When summarizing the effect of change cases, strong effects can be seen from the majority of change cases. For example, there were ten positive responses out of sixteen across two categories regarding the effect of previous change experiences while discussing change case three - the incohesion change case. Whereas when summarized the responses for change case eleven - cotton work uniform change case, the effect was not obvious. They were both niche expansion cases but with different change distances. Is there any relationship between change distances, change consequences on performance and modification routines? This requires an examination of the effect of various distances of niche expansion changes, which leads us to examine Proposition 2 of this study, and it is discussed next.

5.4   The Effect of Change Distances on Performance

The research question of this thesis concerns how and why organizational change leads to different consequences on performance. The extent of niche expansion and its effect on performance is an important issue to address directly and to answer the research

question. Many theorists have argued that niche expansions induce deleterious outcomes (Hannan and Freeman, 1989, Haveman, 1992), but it depends on the distance of the changes. The greater the distances are, the less applicable of this expansion is (Audia et al., 2000; Barnett & Carroll, 1995; Henrich R. Greve, 1999; Hannan et al., 2007; Miller & Chen, 1994). Agreeing with those studies, Proposition 2 of this thesis predicts that there is significant relationship between the extent of niche expansion and change consequence on performance. The more unrelated the new niche moves are to previous domains, the more organisational performance is likely to be negative.

Firstly, the interview transcripts showed that twenty five informants from three branches agreed that whether or not the new product expansion related to the previous domain had a significant effect on consequence. For example, the vice general manager[30] of HD branch, while talking change case 3 - incohesion material product expansion change case, commented:

"Yes, there is a big difference on change consequences whether the new product is relating with previous ones. For instance, some customers inquired us that they were interested in one kind of filter material which possible could be with infinity length and without glue in order for wider market niches. It was not available in Chinese market at that time .... They promised the potential order if the product can satisfy their criteria and the quality they required. They were our existing customers with good credits, what we need to do was trying to solve the technical problems."

Nevertheless, the respirator production manager[31] of HD branch thought it would be unsuccessful when he mentioned disposable nuisance dust mask product expansion change case, he said:

"Of course, the new product expansion is more difficult to be managed if we do not know much about it. For example, when the disposable nuisance mask was launched,

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[30] This manager represents informant number 11 in Appendix VII.
[31] This manager represents informant number 5 in Appendix VII.

everything was not that easy as we thought. We got interested in this product at one international exhibition, since it was made from the same material as we producing, it can fully utilize the leftover fabric of filter, we decided to start to investigate. However, the direct production facility was not available, the workshops in other factories did not allow to be visited. We invented this product line by ourselves cooperating with a facilities producer. The facilities were readjusted many times in order to reach the standard of penetration efficiency which market required. I remember that it was almost half an year later than we expected to achieve the first order.''

The significant relations between the extent of change and change consequence can be clearly seen from the result of interviews. Further, this study measured change distances related to two models of product expansion for seven niche expansion change events, in order to examine why they had various performance consequences.

In order to distinguish the degree of change, seven product expansion change cases were selected in this study, they were initially evaluated whether the new change is related with the existing domains by using the model proposed by Haveman (1992). They were evaluated by assessing three dimensions: clients, products and technology, Table 5.4 shows the results of thirty four interviews.

Table 5.4: Qualitative assessment for the distance of product expansion in terms of clients, products and technology

Change Events	Clients	Products	Technology	Assessment
1.) Disposable Nuisance Dust mask product expansion Change Case (1,3,5,8,9,13)	D D D D D D	D D D D D D	S D D S S S	
	D	D	S	Unrelated
3.) Incohesion Material product expansion change case (7,8,11,14,15,17, 22,25)	D S S D S S S D	S D S D S S S D	D D D D D S S D	
	S	S	D	Related
5.) Compounded respirator product expansion change case (2,5,8,10,16,19,25)	D S S S S D S	S D S S D S D	D D D S D S D	
	S	S	D	Related
8.) Horizontal and vertical compounded respirator product expansion change case (2,4,5,8,13,16,19,24,25)	S S S S S S S S S	S S D D D S S S S	S S S D S S S S D	
	S	S	S	Related
9.) Disposable coverall product expansion change case (2,4,11,22)	S D D D	D D D D	S D S S	
	D	D	S	Unrelated
10.）Filter bag product expansion change case (1,2,3,4,8,11,20)	S D S S S D D	S D D D D S S	S S S S D D D	
	S	D	S	Related
11.) T/C, Cotton work uniform product expansion change case (1,2,3,4,6,12,21,23)	D S D D D S S D	D D D D D D D D	S D S D D D D D	
	D	D	D	Unrelated
*D= Different from original domain; S= Similar to original domain.				
The number stands for informants, total 25 informants Top managers: Informants 1, 2, 3,7,11,18 Middle Managers: Informants 4,5,6,8,9,10, 14,17,19 Staff: All the rest				

As we mentioned earlier, following the techniques of Haveman (1992), seven niche expansion change cases were assessed by informants in terms of three categories for each dimension. In each dimension: 1.) If the response was that the new product was different from the original domain, mark 'D' was given; 2.) If the response was that the new product was in the original domain, mark 'S' was given. 3.) The prevalence result was concluded in each cell for each dimension. 4.) If the assessment of a new product was with two 'D' or over, this new product was regarded as 'Unrelated' diversification. Otherwise, it was a 'Related' diversification change. For example, for change case three

- Incohesion material product expansion, it was evaluated by eight informants: informant No.7, informant No. 8, informant No. 11, 14,15, 17, 22 and informant No. 25. The positions of those informants hold in the case organization can be found in Appendix VII. The majority of these informants agreed that this new product was targeting a similar customer group as an existing product had; thus the prevalence result is 'S' in 'Clients' category. It was within a same range of existing product series, 'S' was given in 'Products' category. But it had to adopt a new producing technology, 'D' was given in 'Technology' category. As the results were two 'S' and one 'D', it was evaluated as a 'related' diversification.

Same procedure applied to other six cases, consequently, change case one (Disposable nuisance dust mask), change case nine (disposable coverall) and change case eleven (T/C work uniform) were evaluated in the category of unrelated niche expansion change cases. On the other hand, change case three (incohesion materials), change case five (compounded respirator), change case eight (horizontal and vertical compounded respirators) and change case ten (filter bag) were in the category of related markets.

Next, the change consequences on performance can be assessed for the related vs. unrelated categories evaluating by interviews. From interview responses, the result was that all informants agreed that the closer they were to the previous domain, the easier it was to get a positive effect. Related product expansion change cases were more likely to have positive performance than unrelated change. While discussing specific change cases, all informants who covered change case one (disposable dust mask) and change case eleven (T/C cotton work uniform), which were assessed as unrelated category, evaluated that they had negative performance consequences, at least in short term. By contrast, all the change cases in the related category and change case nine (disposable coverall) in the unrelated category were given both positive and negative evaluations to their performances.

For example, the filter bag change case was assessed in the related category, some

informants criticized that it influenced the market of previous filter fabric, as it was a higher end product than previous filter product. Although the main penetration technologies were similar, the adaptation process for its processing facilities was longer than they expected. However, some manager stressed its long-term potential benefit effect. The lab master[32] commented:

"This bag sewing technique is a trend of the international market… , although we had a period of hard time, it has great potential to be developed."

While discussing the change effect of disposable coverall change case on performance, the general manager of SJZ branch[33] commented:

"…It was decided because it can be combined with our respirator as the safety kit in order to meet the requirement by few of our existing respirator customer. It promoted the order of respirator. However the (requirement) quantity was very small, since the main customers in the disposable coverall market are different. …Thus, at that time, we had not invested facilities and workshop, we did outsourcing in our cooperated factories."

The export manager[34], while talking the same case, stated:

"At the beginning, the order quantity for disposable coverall was very small, it was hard to arrange such small quantity of coverall in other factory, as it normally need minimum quantity to arrange the fabric production, thus they (cooperated factory) required us to purchase the fabric and all the accessories. Sometime, their production time did not apply…. It distracted our attention on our main products, if we could spend same amount of time on our main product, probably can achieve the orders several times more than those for overall. In this case, I would say, it had negative effect on performance, at least at that time."

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[32] This staff represents informant 25 in Appendix VII .
[33] This manager represents informant 2 in Appendix VII .
[34] This manager represents informant number 21 in Appendix VII.

It can be seen from above that the result was the same as regards the change effect of disposable coverall; both negative and positive evaluations were shown. This was the only unrelated niche expansion change case which was evaluated with both positive and negative consequences from the informants. The reason for this might be explained in two ways, based on interview responses. It could be claimed that since this was not considered the main product, it did not absorb the same resources as other products, so it did not have an obvious or clear effect on performance. Another explanation is connected to the restructuring process. This change case only dealt with one branch of the case organization, which was not the headquarters, and as it was without important strategic value it did not necessarily break the current operational routine and structure, and induce radical change. Thus even if it was an unrelated niche expansion change, the negative effect on performance was not clear in this change case.

Some informants who had gone through more than one niche expansion supplied comparative assessments. The results showed there were more risks for two or three dimension changes than for one dimension adjustments. This was consistent with the work of Haveman (1992), Miller and Chen (1994), Greve, (1999) and Audia, Locke, and Smith (2000) that one dimension diversification of the organisational domain must have a less harmful effect on performance than radical dimensions diversification. For example, the lab director[35] commented that the filter bag change case, which was with a similar target customer and technology as the previous filter fabric but target different market niche, was dealt much easier than disposable nuisance dust mask change case, which had a similar penetration technology but in a different product series and target at different customers compared with previous products.

It was supported by several other informants. For example, while comparing the disposable nuisance dust masks change case with compounded respirator change case, the respirator production manager[36] of HD branch commented:

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[35] This staff represents informant number 8 in Appendix VII .
[36] This manager represents informant number 5 in Appendix VII.

"As you know originally we were filter material producer, the dust masks was a totally different product to us at that time, new production machines, new testing facilities, new processing method, new workers, new market rules..., although the previous penetration test technology can help. It was a long adjustment processes, we suffered losses until I think... one year later..."

The disposable nuisance dust mask product expansion uses similar penetration technology but in different product series and with different target clients in an unrelated category. Comparing it with the compounded respirator product expansion change case occurring seven years later, which was in a related category and with partial overlap of target customers, similar product series, by different processing technology, he added:

"The exploration of moulded compounded respirator was based on the previous market of disposable nuisance dust mask. Although compounded respirator is a higher end product in this market, whereas the disposable nuisance mask is cheapest, their target customers partly overlap. As you understand, some customers only target high end products with better profits, some countries only allow very cheap products to enter, some big distributors buy a whole series of products.... And their market positions are different, the nuisance mask only can be used in the very limited dust protective areas, while compounded respirator are compulsive to be worn for wider industries like steel and chemical industries.... More importantly, their processing methods are totally different. However, the expansion process of compounded respirator was much shorter than last time, the order increased soon."

Comparing it with the change effect of horizontal and vertical compounded respirator change case, which was evaluated in related category, as same as compounded respirator, the foreign trade director[37] said:

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[37] This manager represents informant number 2 in Appendix VII.

"The horizontal and vertical style (respirator) was accepted by our existing customer very soon and was getting even more popular..., very few complaint was received when we did survey after sale at the first beginning, since it has similiar product standard and market rule and we are familiar with it."

If comparing those three dimensions of adjustment, informants said they would prefer to adopt the new product with similar technology because new technology was the hardest aspect to solve. It was also the important indicator to show the company's position in the market. It agreed with the finding of Baum & Singh (1994) and Dobrev et al., (2003) that the technology dimension is a key indicator of the overall company strategy and market position. Moreover, some informants mentioned the short term and long term performance consequences; it will be examined later in this chapter.

The relationship between the product expansion distances and the performance consequences for related vs. unrelated market can be noted. Informants found unrelated product expansions had more negative effects and more risks than related changes. Also there were some benefits in making related niche expansions. This gave some support to the views in the work of Rumelt (1982), Ramanujam & Varadarajan (1989) and Hannan et al., (2007) that cost-benefit analysis of the effects of change need more attention and rationalization of customer is suggested to be explored in the organisational changes.

The evaluation of interview responses for the effect of change on performance for related and unrelated niche expansion cases will be tested against the company's financial data later, together with the result from ecological niche expansion model of Hannan *et al.*, (2007). Next, the extent of niche expansion cases were further measured against the ecological change types model, as we discussed in previous section, using the criteria and character of each type in this model and following the same frequency techniques as in the previous section. The results for the degree of change for seven niche expansion cases are shown in Table 5.5.

Table 5.5: The assessment of niche expansion by change type model

Change cases	Surprise/ violation unforseen (Opacity)	Culture Resistance (Asperity)	Corporation issue / relations among units are broken or unsettled (Intricacy)	Overall Assessment by niche type I-IV
1.) Disposable Nuisance Dust mask product expansion Change Case (1,3,5,8,9,13)	Yes	Yes	No	IV
3.) Incohesion Material product expansion change case (7,8,11,14,15,17, 22,25)	Yes	No	No	II
5.) Compounded respirator product expansion change case (2,5,8,10,16,19,25)	Yes	No	No	II
8.) Horizontal and vertical compounded respirator product expansion change case (2,4,5,8,13,16,19,24,25)	Yes[38]	No	No	I
9.) Disposable coverall product expansion change case (2,4,11,22)	Yes	No	No	II
10.）Filter bag product expansion change case (1,2,3,4,8,11,20)	No	Yes	Yes	III
11.) T/C, Cotton work uniform product expansion change case (1,2,3,4,6,12,21,23)	Yes	Yes	Yes	IV

From the table above, it can be seen that based upon the analysis to the characteristics of

each change case[39] from the evaluation of interview transcripts, seven niche expansion

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[38] This case was evaluated with the characteristic of opacity but the change length was shorter than expected. More discussion is supplied in next chapter.

[39] All characteristics identified in this study and their effects relating with all change cases on change processes will be explored in next chapter.

change cases were ranked as type I to type IV[40]. Disposable nuisance dust mask change case (1) and the T/C cotton work uniform change case (11) were evaluated as Type IV by six and eight informants. Although there were no obvious criteria for relations among units are broken or unsettle in disposable nuisance dust mask change case, it met two of three criteria of Type IV. On balance, it was evaluated as type IV change. Following this procedure, the horizontal and vertical compounded respirator change case (8) was regarded as Type I, which is the lowest risk change type. The incohesion material (3), compounded respirator (5) and disposable coverall change events (9) were assessed as Type II niche expansions. There were obvious violations unforeseen in the change processes, but no strong or obvious of culture resistance or relations among units are broken were noticed. Only the filter bag change case (10) was evaluated as Type III, although the phenomenon of cultural resistance and broken relations among units existed, no obvious violation was evidenced during the process.

The possible reason for explaining why there was no obvious corporation issue like broken relations among units in the disposable nuisance dust product expansion change case, as a Type IV change case, was found in the interview responses. Like the practical suggestion shown in the work of O' Reilly and Tushman (2008, 2007), if a product has no benefits to current operation or assets, a new independent business unit, should be opened to produce it. This new product was the responsibility of a few new technical people operating as an independent subunit, mentioned by the respirator director, who was not much involved with other subordinates at that time.

The change case effects on performance were then assessed according to the ecological change type model. Various performance consequences can be seen from the interviews and field participation observation of the researcher. Consistent with the predications, the results showed that all informants who covered the horizontal and vertical compounded respirator change case，which was seen as Type I change from the primary assessment, the majority responses were positive performance consequences, with the relatively shortest change period. The assessment for Type IV change cases – the

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[40] Please refer the introduction of Type I-IV on Page 30 in the literature chapter.

disposable dust mask change case and the T/C and cotton work uniform change case, and Type III – the filter bag change case, by all the informants who discussed these three cases is mostly harmful effect on performance. While discussing the effects on performance of Type II change cases, a majority of informants thought they had a negative effect, while the rest of the informants thought the effect was positive, as same as the results from the unrelated and related model. More example is shown here. Some informants thought the effect of incohesion material change on performance was negative, which was seen as Type II change case, whereas some managers showed positive opinion about its long term effect. While talking about this case, filter material production manager[41] commented:

"…*We did not expect that the adjustment period was that long, I remember the processing machine was invented by ourselves, its production was with a high ratio of inferior waste at the first beginning. The cost was higher than we estimated. The worker cannot get techniques for operation for months. I was not sure how long it (technological problem) can be solved, and what standard it can reach….*"

This view was supported by other informants. For example, the vice general manager[42], while talking about this same case, added:

"...*We suffered losses during that time, it (change process) was much longer than we predicated. Especially we did not expect that it influenced the market of melt blown filter material (previous product), if we did not invest this new material, probably the melt blown material would had better sale performance...*".

However, the international import manager[43] gave a different opinion:

"...*Although there was no profits for a rather long time of period, the incohesion material is with higher technology for wider market. In some area, this material can be*

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[41] This manager represents informant 7 in the Appendix VII .
[42] This manager represents informant 11 in the Appendix VII.
[43] This manager represents informant 22 in the Appendix VII.

the substitute product to a very expensive imported material. Although it influenced the sale of old fabric in native market, the customers are not totally overlap, they have different market segmentation.... It definitely has a positive long term effect on performance."

This was consistent with the author's participation observation record. The managers directly involved with the incohesion material product expansion change case told the author the testing result of the technology data of new material was not stable for a period of time, there was a huge waste of raw material, the cost increased and the quality was not satisfactory. However, the change provided an opportunity for this kind of new product to be developed and compete in the international market. Overtime it became one of their main products.

Comparing the assessment results of the ecological change type model with related or unrelated model, it was interesting to find that two unrelated change cases were neatly assessed as being Type IV, and their change effect on performance was evaluated as negative. Type I to Type III change cases were all in a related category, except for the disposable coverall change case. The possible reason for this was discussed earlier in this section. It was relatively unrelated to previous products, so it was not regarded as a main product, and only existed for the purpose of tie-in business. This meant that a harmful effect of the organisational characteristics during the change process might not be shown. The only positive evaluation of change went to Type I – the horizontal and vertical compounded respirator change case, although there was negative opinion as well. The long-term effects on performance, which were mentioned in some interviews, will be examined in next section.

The results for the change effect on performance based on interviews relating to the seven niche expansion change cases will be further tested against company financial data. In order to assess the relations of change distance and change consequence on performance, the financial data for seven niche expansion change events were included in Table 5.6 below. This shows the financial records of turnover and net income in the

branch where the change took place in the year of the change events, and the branch growth rate in the year of change events compared with the mean increase rate of the branch in the case organisation. The financial data were extracted and calculated from the balance sheet of the case organization.

Table 5.6: The assessment of change effect on performance by financial records for seven niche expansion change events

Source: Company documents [44]

Change Case	Related/ Unrelated	Niche Type	Year	Turnover in Branch	Net profit in Branch	Branch Growth rate #
1.) Disposable Nuisance Dust mask product expansion Change Case (1,3,5,8,9,13)	Unrelated	IV	1994	5.124 ↓	-0.009 ↓	Lower[44]
3.) Incohesion Material product expansion change case (7,8,11,14,15,17,22,25)	Related	II	1998	9.001 ↑	-0.198 ↓	Lower
5.) Compounded respirator product expansion change case (2,5,8,10,16,19,25)	Related	II	2001	15.857 ↑	-0.006 ↑	Lower
8.) Horizontal and vertical compounded respirator product expansion change case (2,4,5,8,13,16,19,24,25)	Related	I	2003	30.811 ↑	3.009 ↑	Higher
9.) Disposable coverall product expansion change case (2,4,11,22)	Unrelated	II	2004	9.107 ↑	1.298 ↓	Lower
10.) Filter bag product expansion change case (1,2,3,4,8,11,20)	Related	III	2004	31.656 ↑	2.513 ↓	Much lower
11.) T/C, Cotton work uniform product expansion change case (1,2,3,4,6,12,21,23)	Unrelated	IV	2005	1.931 ↓	-0.083 ↓	Lower

Branch turnover and branch net profit in the case organisation were counted by million RMB; Extracted from company financial documents.

Branch growth rate is the percent growth in turnover for the branch in the year of change took place. This percentage increase is then compared with the average annual rate of growth in turnover for the branch.

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[44] The growth rate of this year was calculated by comparing the turnover of this year with the turnover of the original organisation in 1993 before the joint venture was founded in 1994.

For Table 5.6, taking change case eight (Horizontal and vertical compounded respirator product expansion) as an example, we go cross the row and explain what each row and the numbers refer to. Referencing from the company documents, change case eight took place in main branch in 2003, the turnover of main branch in 2003 was RMB 30.811 million, the net profit of main branch in 2003 was RMB 3.009 million, as shown in Table above. The turnover of main branch in 2002 was RMB 21.086 million, so in 2003 the branch turnover increased 46.12%, the company document recorded the growth rate of main branch in 2003 was 46.12%. The average increase rate of main branch from 1994-2009 was 27.17%, therefore in 2003 when change case eight happened, the turnover growth rate of that branch was higher than the normal increase rate (the speed of development). Thus 'Higher' was shown in the row of 'Branch growth rate'. Overall, when change case eight took place in 2003, both branch turnover and net profit increased comparing with those two variables in 2002. The speed of development in 2003 was higher than normal speed of development of the branch. We can say as a type I change in a related diversification category, which should be the type of change with the lowest risks, the change effect on performance of this case which had smaller change distance, was positive. Also the interview result showed that all informants who covered change case eight evaluated it had a positive performance consequence.

As explained before, the reason why the branch growth rate was adopted here as a indicator is because the general development speeds of case organization and China[45] as the research context were very quick, if we only see the numbers, it will be always increasing. But if the development speed in the year of change was lower than the organizational normal speed of development, this would be the change effect, at least partly due to the change effect.

Comparing the results of change case eight with for instance change case eleven, both financial figure decreased in the year of change, branch growth rate was lower than the

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[45]The comparative graph including the growth rate of the case organisation and the increase rate of GDP between 1994-2008 is shown in Appendix X.

normal increase rate. The primary assessment for change effect on performance for this case was also negative. As change case eleven was concluded as an unrelated, type IV change, these results demonstrated the change with bigger extent was more harmful if comparing with change case eight which had smaller change extent.

In the light of Table 5.6, it is reasonable to claim that the results from financial performance records of the change effect were consistent with the evaluation result from the interviews. Except the above two cases, the financial data also revealed that in the years that change case one (the disposable nuisance dust mask) and change case eleven (T/C cotton work uniform) took place, as Type IV change events in the unrelated category, both turnover and net income of that branch decreased in these two years. This corresponded with the harmful change effects as claimed by the manager informants. The growth rate of those two years was lower than average.

There was a slightly complicated situation shown in the financial performance records for Type II and Type III change events, which were all in the related category, except for one case[46]. Three of four change events in Type II and Type III category involving one financial variable increased and the other one decreased in the year of the change event. This probably explains why interview responses included both negative and positive evaluations of performance. Only one change case – the compounded respirator change case (5), as one of the Type II changes, had both branch turnover and net income increasing in the year that the change event happened. The financial data also showed that the branch growth rate in the year of the change event for four Type II and Type III change cases, were all lower than the average increase rate of the case organization.

It is necessary to clarify here that the national GDP increase rate in China was further checked to see the effect of the general economic rate of development and the inflation index of the research context, as discussed in the previous section of this paper. If we compare the graph showing the increased rate of national GDP with the case

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[46] The disposable coverall change case was evaluated in unrelated category and type II change. The possible reason has been covered earlier in this section.

organisation between 1994 and 2008 in Appendix X, we see that the increased rate of change in the national GDP was rather flat if compared with the rate of development of the case organization. Thus, it was assumed that the adjustment effect of national development and inflation on performance in the case organisation was slight and could be seen as being negligible in this study.

Both the results from the interview responses and the organisational financial records for seven niche expansion change cases supported the conclusion that Type I change cases had a beneficial effect and Type IV changes were harmful. Type II and Type III change cases had a harmful effect on one of two financial variables in this study. The exceptional Type II change case – the compounded respirator change case – increased with both financial performance variables. A useful way to explain this is as follows. An organisation with a broader niche has generated a product that appeals to diverse subsets of the audience. When the tastes of the audience change, the company is likely to retain some appeal in some of the positions that it engages (Hannan et al., 2007). Similarly, Romanelli (1989) finds that generalists can better respond to environmental shifts than specialists. This could explain why organisations with a wide product range might gain some benefit from other products more than the losses associated with this new niche expansion. Therefore, the harmful effect of a new niche expansion was not obvious. Another explanation might be that this compounded respirator niche expansion change filled the cavity of the initial concave with the disposable nuisance dust masks niche expansion change case. In this case, the new niche expansion had almost no damaging effect. This desirable convex niche change could compensate for the losses associated with change processes (Hannan *et al.*, 2007).

In summary, the results from the analysis of financial performance, shown in Table 5.6, are parallel with those from interview responses. Type I change cases improved performance, Type IV change cases harmed performance, and Type IV change cases were neatly categorized in unrelated niche expansion. Type II and Type III changes harmed net income performance except in one case. Six out of seven estimates were in the predicted direction. Agreeing with the finding of Miller and Chen (1994), Barnett

and Carroll (1995), Greve (1999), Audia *et al.,* (2000) , and Hannan *et al.*, (2007), these results support Proposition 2 in this paper that there is a significant relationship between the extent of niche expansion and its effect on performance. The more unrelated are the new niche moves to the previous domain, the more organisational performance is likely to be negative.

Additionally, the results of this section also provide some support to the first part of Proposition 3 that five out of seven niche expansion change cases were harmful, as indicated by the fact that at least one financial performance variable in the year of the change event was negative. It provided evidence for Proposition 3 that the instant effect of organisational change was generally harmful to organisational performance. Also following the implication of potential long-term positive effect of change events in the interview transcripts, the dynamic change effects should not be ignored, and they will be examined in the next section.

5.5   Organisational Change and Dynamic Performance

5.5.1 Dynamic Change Consequences on Performance

As mentioned in the literature review, inertia theory promoted many researchers to focus on the performance consequences of inertia. The link between change action and change consequence on organisational performance is recommended (Pettigrew et al., 2001). However, the dynamic change effect on performance is rarely examined empirically. Following the studies carried out by Haveman (1992) and Amburgey (1993), dynamic financial performance, as an important indicator of change effect, was assessed for evaluating the organisational change effect in this section.

The financial data for 15 change cases were extracted from the company documents and presented in Table 5.7 below. As mentioned earlier, following the measurement techniques of Haveman (1992), the performance data for each change case were

assessed twice in this section: the instant after the change (in 1–6 months after change), and a period of time after the change (in 7–12 months after change).

Table 5.7 The Dynamic Performance Measurement for 15 Change Events in the Case Organization
(The financial data were extracted from company documents)

Change Case	Month/ Year	Pre-change performance and the trend					Performance after change and the trend				
		Second access (7-12 months before change)		First access (1-6 months before change)			First access (1-6 months after change)			Second access (7-12 months after change)	
		Turn-Over In Branch	Net Profit In Branch	Turn-Over in Branch	Net Profit in Branch	Branch Growth Rate *	Turnover in Branch	Net Profit in Branch	Branch Growth Rate #	Turn-Over in Branch	Net Profit in Branch
1.) Disposable nuisance dust mask product expansion change case	Sep, 1994			2.645	-0.004		2.479 ↘	-0.005 ↘		2.934 ↗	-0.007 ↘
2.) Breast pad product deletion change case	April, 1997	3.219	-0.009	4.329 ↗	0.041 ↗	18% Lower	3.743 ↘	-0.022 ↘	7% Lower	4.341 ↗	-0.042 ↘
3.) Incohension material product expansion change case	July, 1998	4.341	-0.042	4.035 ↘	-0.031 ↗	7% Lower	4.966 ↗	-0.167 ↘	11.35% Lower	4.811 ↘	-0.032 ↗
4.) Battery separator product deletion change case	Oct, 1999	4.966	-0.167	4.811 ↘	-0.032 ↗	11.35% Lower	4.733 ↘	-0.026 ↗	6% Lower	5.874 ↗	-0.001 ↗
5.) Compounded respirator product expansion change case	Jan, 2001	5.874	-0.001	7.748 ↗	-0.01 ↘	42.73% Higher	7.006 ↘	-0.005 ↗	16.41% Lower	8.851 ↗	-0.001 ↗

6.) Plant expansion one (main branch)	Oct, 2002	8.851	-0.001	9.316	1.407	16.41% Lower	11.752	0.309	32.86% Higher	15.727	1.723
7.) Plant expansion two (SJZ Branch)	Feb, 2003	2.203	0.349	3.404	0.521	30.54% Lower	2.957	0.458	47.92% Lower	5.337	0.877
8.) Horizontal and vertical compounded respirator product expansion change case	Feb, 2003	9.316	1.407	11.752	0.309	32.86% Higher	15.727	1.723	46.25% Higher	15.084	1.276
9.) Disposable coverall product expansion change case (SJZ branch)	April 2004	2.957	0.458	5.337	0.877	47.92% Lower	4.207	0.497	13.25% Lower	4.9	0.8
10.) Filter bag product expansion change case	May, 2004	15.727	1.723	15.084	1.276	46.25% Higher	14.068	0.073	3% Lower	17.588	1.81
11.) T/C, Cotton work uniform product expansion change case （FZ factory）	May 2005	1.2	0.091	1.33	0.122	41% Higher	0.725	-0.026	-23% Lower	1.206	-0.057
12.) Plant expansion three (main branch)	Aug, 2006	38.257	2.506	73.272	4.876	82.8% Higher	42.266	3.83	99.65% Higher	50.162	3.009

13.) Top leader succession in sewing factory (FZ)	Sep, 2006	1.206	-0.057	1.337	-0.105	-23% Lower ↗	1.517 ↗	0.186 ↗	47% Higher ↗	1.968 ↗	0.288 ↗
14.) Plant expansion four (SZ branch)	April, 2007	73.272	4.876	42.266 ↘	3.83 ↘	99.65% Higher ↗	50.162 ↗	3.009 ↘	-3.25% Lower ↗	61.622 ↗	4.774 ↗
15.) Top leader succession (SZ branch)	Nov, 2008	61.622	4.774	52.905 ↘	3.916 ↘	-3.25% Lower ↘	50.776 ↘	1.924 ↘	-7.25% Lower ↗	55.572 ↗	4.868 ↗

Branch turnover and branch net profit in the case organisation were counted by million RMB;

The mean growth rate of main branch was 27.17%; the mean growth rate of SJZ branch was 56.34% and the mean growth rate of FZ factory was 17.51%. Source: Company documents.

Branch growth rate is the percent growth in turnover for the branch in the year of change took place. This percentage increase is then compared with the average annual rate of growth in turnover for the branch.

* Branch growth rate in the year of one-year ahead change event. This percentage increase is then compared with the average annual rate of growth in turnover for the branch.

In order to clarify the numbers of each column, taking change case five - Compounded respirator product expansion as an example, we explain each column is referring to. Change case five started in main branch in Jan, 2001. Thus we reference the semi-annual financial record of main branch in June, 2001 (1-6 months after change) as its first after change measurement, comparing with the financial record of main branch in Dec, 2000 which is 1-6 months before change, as the first assessment for its pre-change condition. As we can see, before change, the branch turnover in Dec 2000 was RMB7.748 million and its net profit was RMB -0.01 million; In June 2001, branch turnover decreased to RMB7.006 million; and net profit condition was getting better, improved to RMB -0.005 million after change. Thus, one upward arrow was given in 'Turnover in Branch' (First access 1-6 months after change), one downward arrow was given to 'Net profit in Branch' (First access 1-6 months after change). The instant after change performance comparing with pre-change condition had one financial figure decreased, one increased (improved), the instant change consequence on performance was not clear in this case. The result from financial record will be validated by the primary assessment by interviews, the result will be shown in this section later.

From Table 5.7, we can see that the results showed that in eight out of 15 change cases both turnover and net profit performance of the branch where change took place decreased in 1–6 months; in five of 15 change cases one financial variable increased and the other decreased. In only two cases did both branch net profit and turnover performances increase during the first six months after the change. On balance, this research found that organisational changes had a harmful instant effect on performance in the case organisation of the safety and filtration industry in China.

There were no observable differences in the instant effect of change between the four kinds of change events which were selected in this study: plant expansion change, niche expansion change, product deletion and top leader succession changes. For example, in those eight change cases which had the instant effect that both turnover and profits of branch decreased, all four kinds of change events were included - two plant expansion change events, four niche expansion change events, one product deletion event and one top leader succession change event. And for those two change cases in which the instant effect involved both financial variables increasing, they included one niche expansion event and one top leader succession change – horizontal and vertical compounded

respirator product expansion in 2003 and top leader succession in sewing factory in 2006.

The reason for an instant benefit effect of these two changes might be explained from the results of the interview transcripts. The informants who covered these two cases all mentioned the effects of the external environment changing. For example, while talking about the horizontal and vertical compounded respirator product expansion change case, the vice general manager[47] mentioned the effect of the SARS explosion in 2003, and also mentioned the effect of a previous similar type of change – a compounded respirator change case in 2001, she stated that:

"*When we added new horizontal and vertical model of compounded respirator in 2003, it went quite smoothly. As we launched the moulded model of compounded respirator in 2001, this experience helped a lot. Also because of SARS explosion in 2003, because we started the compounded respirator earlier than most other manufacturers, our new model was accepted by market very soon. And we had chance to be awarded as one of two respirator suppliers to central government, whereas many dust masks manufactures were forced to close due to quality or other problems.*"

It was supported by the foreign trade manager[48], he added that:

"*The pitfall of the new products (horizontal and vertical type of compounded respirator) had to be conquered quickly under the pressure of disease explosion and the government inspection. The requirements were much more than our production capacity, all production lines were 24-hour operational and workers were three shifts per day, the workers were familiar with the production techniques of new models very soon.*"

Similarly, while talking about top leader succession in a sewing factory change case in 2006, the foreign trade manager[49] stated that:

"*In 2005–2006, bird flu disease explosion was mainly serious in Europe, our disposable coverall achieved CE product standard certificate, it was very popular and the sewing production lines in FZ factory were fully arranged until the end of 2006. Probably*

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[47] This manager represents informant number 11 in Appendix VII.
[48] This manager represents informant number 2 in Appendix VII.
[49] This manager represents informant number 2 in Appendix VII.

because of this busy working schedule, the effect of the leader change was not obvious."

From the above, we can see that the reasons that two change cases had instant benefit effects were due to the external environment, as well as to a previous change experience. It implicated the concept of relative inertia introduced by Hannan and Freeman (1984), as discussed in the literature, that if the environment undergoes a sudden transformation, new changes are based on the previous domain, and the losses of organisational change are less than the gain from the new environment, then the changes might improve performance (Haveman, 1992). The effect of the environment on change will be examined again later in this section.

The instant change effects of all change events from financial records were then compared with the evaluation results from the interview transcripts. They were consistent. Using the technique of frequency counting as mentioned earlier, from the business managers' and front workers' point of view who had experienced the change events, 13 out of 15 change cases were evaluated as experiencing an instantly harmful effect; two cases - horizontal and vertical change case and breast pad product deletion change case – did not experience an instantly harmful effect. The results are shown in Table 5.8[50] below.

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[50] The results for long term effect evaluation from the interview responses were presented together with the purpose of comparison. The long term effect of change events will be discussed later in this section.

Table 5.8: The short-term and long-term effects of change on performance: 15 change events

Change Events	Instant change effect	Long term change effect
1.) Disposable nuisance dust mask product expansion Change Case (1, 3, 5, 8, 9, 13)	(-) (-) (-) (-) (-) (-)	(+) (+-) (+) (+-) (-) (+)
	Prevalent effect: (-)	(+)
2.) Breast pad product deletion change case (1, 10, 11)	(+) (+-) (+)	(+) (+-) (+-)
	Prevalent effect: (+)	(+-)
3.) Incohesion material product expansion change case (7, 8, 11, 14, 15, 17, 22, 25)	(-) (+) (+-) (-) (-) (-) (+-) (+-)	(+) (+) (+) (+) (+-) (+) (+-) (+)
	Prevalent effect: (-)	(+)
4.) Battery separator product deletion change case (1, 8, 9)	(-) (+-) (-)	(+-) (-) (+-)
	Prevalent effect: (-)	(+-)
5.) Compounded respirator product expansion change case (2, 5, 8, 10, 16, 19, 25)	(+) (-) (+) (-) (-) (-) (+-)	(+) (+) (+) (+) (+) (+-) (+)
	Prevalent effect: (-)	(+)
6.) Plant expansion one (main branch) (1, 2, 3, 5, 8, 10, 14)	(+) (-) (-) (-) (+-) (-)	(+) (+) (+) (+) (+-) (+)
	Prevalent effect: (-)	(+)
7.) Plant expansion two (SJZ branch) (2, 19, 20, 21, 22)	(+) (-) (+-) (-) (-)	(+) (+) (+) (+) (+)
	Prevalent effect : (-)	(+)
8.) Horizontal and vertical compounded respirator product expansion change case (2, 4, 5, 8, 13, 16, 19, 24, 25)	(+) (+) (+) (+) (-) (+) (+-) (+-) (-)	(+) (+) (+) (+) (+) (+) (+) (+) (+)
	Prevalent effect: (+)	(+)
9.) Disposable coverall product expansion change case (2, 4, 11, 22)	(+-) (-) (-) (-)	(+) (+-) (+) (+)
	Prevalent effect: (-)	(+)
10.) Filter bag product expansion change case (1, 2, 3, 4, 8, 11, 20)	(+-) (+-) (-) (-) (+-) (-) (-)	(+) (+) (+) (+) (+) (+) (+)
	Prevalent effect: (-)	(+)
11.) T/C, Cotton work uniform product expansion change case (FZ factory) (1, 2, 3, 4, 6, 12, 21, 23)	(-) (-) (-) (+-) (-) (-) (-)(-)	(+) (+) (+-) (+-) (+) (+-) (+)(+)
	Prevalent effect: (-)	(+)
12.) Plant expansion three (main branch) (1, 2, 3, 6, 7, 10, 11, 14, 15, 16)	(+) (+) (-) (-) (-) (-) (-) (-)	(+) (+) (+) (+) (+-) (+) (+) (+)
	Prevalent effect: (-)	(+)
13.) Top leader succession in sewing factory (2, 6, 11, 12, 21, 23)	(-) (-) (-) (-) (-) (-)	(-) (+-) (-) (+-) (-) (-)
	Prevalent effect : (-)	(-)
14.) Plant expansion four (SZ branch) (1, 4, 11, 14, 17, 18)	(-) (-) (-) (+-) (+) (-)	(+) (+-) (+) (-) (+) (+)
	Prevalent effect: (-)	(+)
15.) Top leader succession (SZ branch) (1, 11, 17, 18)	(-) (+-) (-) (-)	(+-) (+-) (+) (+-)
	Prevalent effect: (-)	(+-)
The number stands for informants, total 25 informants (+) Benefit effect evaluation Top managers: Informants 1, 2, 3, 7, 11, 18 (-) Harm effect evaluation Middle Managers: Informants 4, 5, 6, 8, 9, 10, 14, 17, 19 (+-) Not sure of the effect Staff: All the rest		

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The results from the interview transcripts showed that the majority of informants commented that change had a negative effect at first. For example, the administration director[51] of SZ branch, when she talked about the top leader succession case in their branch, commented that:

"It took a long time to find a suitable person who knew the filtration technology well, the previous technology director left before we found a new one, at that time our production had many problems, low efficiency, unstable penetration etc. Even for several months after the new director had started working, the production problems were still not fully solved, he needed time to be familiar with our facilities, our processing methods, and our workers."

The marketing and production director[52] of SZ branch, while discussing Change Case Fourteen - plant expansion four in SZ branch established, he said:

"It was a hard time for everyone. It was a big investment; very limited flow capital was left for our production and marketing activities. Everything was unfamiliar to us, new location, new facilities, new workers…. I remember that a lot of things were out of control, we could not produce normally, there was no profit for quite a period of time, and we wondered whether this decision was right."

There were two discrepancies between the results of financial record and the interview transcripts with regard to the instant effects of 15 change events. The financial data showed that both financial variables increased after the top leader succession in the sewing factory change case, whereas the interview informants evaluated that it had a harmful instant effect. For example, the work uniform production director[53] in HD branch, while talking about this case, stated that:

"We had to change the managers several times continuously after the first one left, it took almost half a year to finally find a suitable person who we felt ok about. However, the new leader did not fit into the organisationat the beginning, the workers did not like him and did not obey his new rules. It was not only a manager changing, there are so many problems after changing a top manager. "

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[51] This manager represents informant number 18 in the Appendix VII.
[52] This manager represents informant number 17 in Appendix VII.
[53] This manager represents informant number 6 in the Appendix VII.

As mentioned earlier, the potential negative effects of this change were concealed good sales performance, and cannot be seen from the financial records. The other discrepancy was found in the case of breast pad product deletion: the financial data showed that both financial variables decreased soon after the change, whereas some manager informants commented it was not harmful and they supported this change decision. It probably implicated the finding in the work of Freeman & Hannan (1975) that the product deletion change has a comparable effect as harmful as the product expansion change case.

The results of this section from both interview transcripts and financial data, agree with the studies carried out by Nelson & Winter (1982), Haveman (1992) and Hannan *et al.*,(2007) which demonstrated that the instant effect of organisational change was harmful. It confirms the predication of Proposition 3 in this study for the instant change effect component.

Regarding long-term effects, to explain Table 5.7, still using change case five as example. Change case five started in Jan 2001. We measure the financial record in Dec, 2001(7-12 months after change) as its second assessment after change. At that time, the branch turnover was RMB 8.551 million, net profit was RMB-0.001 million, comparing with the records in June, 2001 (1-6 months after change), which branch turnover was RMB 7.006 million and net profit was RMB -0.005. Both two financial variables changed better, therefore, two upward arrows were given in 'Turnover in branch' and 'Net profit in Branch' (Second access 7-12 months after change). Change case five was assessed that it had a long term (7-12 months after change) positive effect, from the financial data.

Overall, by the second assessment after change to the financial data of the case organisation, it showed that in nine out of 15 change cases, involving a change effect in 7–12 months time as the long term effect in the study, both turnover and net income in the branch increased, as shown in Table 5.7. Also, five out of 15 change cases had the long-term effect that one of the two financial variables increased and the other decreased. In only one case did both turnover and net profit of that branch decrease in 7–12 months time; it was the horizontal and vertical compounded respirator product

expansion change case. On the whole, the long-term effect of organisational change was considered as positive from the results of the financial data. Again, there were no obvious differences to be seen in the long-term change effect between the four different kinds of change events selected in this study.

From the results of the interview transcripts, following the frequency count technique, the results from the interview responses were as follows: eleven out of 15 change cases had a positive long-term effect on performance. Two product deletion change cases and two top leader succession change cases were exceptions, as we can see in Table 5.8. The results of the long term effect for the two product deletion cases and one top leader succession change case in SZ branch were 'not sure', with a neutral '+-' mark given, whereas the result for the other top leader succession in FZ factory was negative. On balance, organisational changes had beneficial long-term effects based on the interviews. The two product deletion cases probably differ because the long-term effect for product deletion cannot be observed. For the top leader succession in SZ branch, probably the effect was still not clear, since they were still looking for a new substitute technology director when the data were collected in their branch.

Two obvious discrepancies between the results of the interview transcripts and the financial data were found in the long-term change effects of the horizontal and vertical compounded respirator product expansion case, and the top leader succession case in FZ factory. The financial data showed that in 7–12 months time at the end of year 2003 after the horizontal and vertical respirator change case, the branch turnover and net income both decreased, however the informants evaluated that this product expansion had a beneficial long term effect. It can be explained from the transcripts and verified by secondary data54 that because the SARS disease spread from April 2003 to June 2003, respirator orders which were designed to protect from SARS were all pooled to be arranged around those months, hence orders of respirator were relatively less after this period. And the financial performance decreased relatively in next half year in 2003.

The other discrepancy concerns the long-term effect of top leader succession in FZ factory. The informants said it had a harmful long term effect, but the financial data showed that both financial variables increased in 7–12 months. The explanation can be seen from the interview transcripts, as we mentioned earlier, although the products lines

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54 The time of the SARS period was approved by the information from the website.

were fully arranged for orders of coveralls until the end of 2006 partly because of the effect of external environments – bird flu explosion – which led to good financial results, some workers and middle managers did not like the new leader. The adaptation process was harmful but was concealed by good financial performance. It was an instance of cultural resistance by moral reaction, and will be discussed in next chapter.

As we can see, the evaluation of the long-term effects from interview transcripts also revealed that the environment had an effect on the consequences of change: as just mentioned, the SARS effect on the horizontal and vertical respirator change case. But there was additional evidence in other change cases. Some informants mentioned the potential benefit of change in reaction to environmental changes. For example, while discussing three times of plant expansion change cases, the financial director[55], commented that:

"We expanded the workshops several times, the lands in three branches were bought and the workshops were all built by ourselves. One of the main reasons to do that was because of the government pressures and benefit policies. It was hard to go through those moving and adjusting periods, but now we can say these decisions were right. In the expansion process, we had space to start thinking of investing in facilities and expanding production lines. It demonstrated our production capacity and increased our credits, the customers trust us as long as they visit our sites, many of our customers are long term customers and keep regular orders with us. This is one of the important reasons that we could still keep normal production during the global financial crisis in 2008."

Some informants also pointed out that new products were a long term benefit which might be seen in three to four years. As we mentioned before, the launch of incohesion material was not smooth, and it influenced the sales of previous filter materials. However, it is one of their main products and contributes one-quarter of total turnover to the main branch in the case organization56. It was considered as a limitation in the measurement model by the financial data in this study, since it cannot be managed to measure change cases effects by a three- or four-year time lag.

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[55] This manager represents informant number 3 in Appendix VII.
[56] This information comes from the interview response of informant number 7, 11 and the observation record.

In addition, it was noticed that the measurement of the instant effect of horizontal and vertical respirator change (change case eight) overlapped with the period of the long term effect for change case six- plant expansion one in main branch. Thus, the instant beneficial effect of the horizontal and vertical respirator change case was also probably due to the long-term effect of the plant expansion change case, which was considered as one limitation in the explanation to the instant effect to this case in this study. The instant effect of change case fourteen might be influenced by the long term effect of change case twelve. However, the financial evidences were further validated by the the result of interview responses, the internal validity of the result was not influenced. All other cases were examined and no change events were found overlapping in time. It is interesting to determine if there is an amplifying effect among change events that one change type might affect how another change type is implemented in future organisational change studies, it is suggested to see change events as interdependent rather than completely independent of each other.

Overall, the result of the interview transcripts of this part showed that the organisational change might benefit performance in the long run under the situation of environment transformation. By examining the effect from both the instant change effect and the long term change effect, the environmental adjustment on change effect was shown in this section. The result here matches the view of relative inertia (Hannan and Freeman, 1984), and the view of environmental effect on change consequence in an adaptation theme. To summarize, from the evidences of both the financial data and the interview responses, we found that organisational change might benefit performance under environment transformation in the long term. In accord with the works of Singh et al., (1986), Delacroix & Swaminathan (1991), Kelly & Amburgey (1991)　and Haveman (1992), the results of this section supported Proposition 3 that the instant effect of organisational change is harmful, but declines over time. The organisational change might improve performance in the long run under the context of environmental transformation in the case organisation under the context of the safety and filtration industry of China. Prior studies advised that the pre-change conditions should be examined and will be discussed next.

5.5.2   Pre- change Performance and Change Consequence

Many previous researches stated that organisational performance is one of the clearest

indicators and predictors for organisational change decisions. The effect of pre-change performance on promoting the change was discussed in the works of Cyert & March (1963), Keisler & Sproull (1982) and Boeker (1997). The views relating to pre-change conditions including the survival threshold for change, expectation for change and regression towards the mean were discussed in the works of Brown (1982), Harrison & March (1984), March (1991), Haveman (1992), Miller & Chen (1994) and the work of Greve (1999). Following the work carried out by Greve (1998) and Greve (1999), this study examined two dimensions of the pre-change condition: (1) the role of pre-change performance to change initiation; (2) the relationship of pre-change performance to the consequences of change. Agreeing with previous theories, Proposition 4 of this study predicts that poor performance makes it easier to promote organisational change. Pre-change performance can moderate the change effect. Comparing pre-change performance with the mean, the consequence of change on performance is more likely to be reversed.

According to the empirical data collected, however, the role of pre change performance to change initiation was not found from the results of interview transcripts and financial data evidence relating to the 15 change cases under the context of the safety and filtration industry of China. From the result of the interview responses, twenty-two of 25 informants said they did not agree that there was an obvious relationship between the pre-change performance condition and the change initiation. For example, the respirator production director[57] commented that:

"*No matter the financial performance is bad or good, if we think it is a good market opportunity, we will go for it. If we have enough funding, the thing will go smoothly. If our financial condition is not good at that time, we will try alternative ways, for instance, we can seek help from the bank or any possible way to solve the money problem.*"

It was supported by many other informants, for example, the QC controller[58] who has been in the case organisation for over 15 years, stated that:

"*I experienced almost all the organisational changes in this firm, I think the top*

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[57] This manager represents informant number 5 in Appendix VII.
[58] This manager represent informant number 13 in Appendix VII.

managers in this company kept looking for new technologies, new opportunities, they tried everything they could to develop the organisation rather than think the financial condition too much when they want a new project."

The general manager[59] said:

"I do not think there is a certain relationship between pre-change condition and the possibility of change, at least in our company. I am aware that if strategic change decisions are made at a time when your financial performance is not good, they will bear more risks. But chance will not wait for you, we made the decision according to the evaluation of that market opportunity. The financial condition was usually our concern after the decision was made, then we focused on the implementation stage to solve it."

The financial data of pre-change performance for the 15 change cases from company documents were presented in Table 5.7. As discussed earlier, in this section, the financial data were assessed twice for measuring the pre-change performance condition. It was assessed by comparing the performance of 1–6 months before change with the performance of 7–12 months before change event. It was measured using two financial variables and the trend of branch growth rate by comparing the growth rate in the year ahead of change with the mean growth rate of the branch in the case organization.

Continue to use change case five as example, we explain the numbers of each row in Table 5.7 for this part. Change case five was initiated in Jan 2000 in the main branch of the case organization. The pre-change conditions were referenced by the turnover and net profit in the main branch in Dec, 2000 (1-6 months before change), and two financial figures in June, 2000 (7-12 months before change). These numbers were branch turnover of RMB 5.874 million, net profit RMB -0.001 in June 2000. Whereas the turnover was RMB 7.748million, net profit was - 0.01 million. Thus, before change, the branch turnover was increasing and the branch net profit was getting worse. One upward arrow and one downward arrow were given in the cells of ' Turnover in Branch' and 'Net profit in Branch' (First access 1-6 months before change).

As we mentioned earlier, we define "Poor pre-change performance" in this study that it needs to comply two conditions: a.) either one of two financial variable lower than

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[59] This manager represent informant number 1 in Appendix VII.

before (comparing the financial data of 1–6 months before change, with 7–12 months before change); b.) and simultaneously the growth rate * of a year ahead of change event lower than average. For change case five, the growth rate in 2000 was 42.73%; the average increase rate of case organization was 27.17%. It means pre-change condition of change case was not lower than normal, it was even much higher than their normal speed of development. As its financial record only complied with condition a.) (one financial figure was getting worse before change), but it did not complied with condition b.). Thus it was not defined as poor pre-change condition for change case five.

According to the empirical results, there were only four out of 14 change cases were defined as poor pre-change performance, so the first part of Proposition 4 – Poor performance before change make it easier to promote change – was not supported by financial figures. The result revealed that six out of 14[60] change cases involved the pre-change condition that both financial variables were higher than before; they were change case two, six, seven, nine, eleven and twelve; five of 14 change cases had the pre-change condition with one variable higher and one variable lower; they were change case three, four, five, eight and thirteen; three change cases had the pre-change condition that both financial variables decreased; they were change case ten, fourteen and fifteen. Moreover, the result of trends of increase rate indicated that there were eight out of 14 change cases that had the pre-change condition that the increase rate in a year ahead of change was lower than average of the case organization; they were change case two, three, four, six, nine, thirteen and fifteen; six change cases had the pre-change condition that the growth rates in a year ahead of change were higher than average; they were change case five, eight, ten, eleven, twelve and fourteen. No clear evidence to support this part of Proposition 4 can be observed.

On the whole, first part of Proposition 4 – poor performance makes it easier to promote organisational change – was not supported from the results of both the interview transcripts and the financial records in this study. What was found in this part did not match the findings of Miller and Chen (1994) and Boeker (1997). It seems to support the views of Wiersema & Bantel (1992) and Amburgey et al., (1993) that managers might decide to change simply because they tend to break with past patterns and practices, and demonstrate their existence.

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[60] The financial data before 1994 was from the original factory before joint venture established, hence it is unlikely to examine pre-change condition for change case one in 1994. Totally fourteen change cases are available to be tested for Proposition 4 in this part.

This result probably needs to be considered further based on the research context. Due to the fast development of the case organization, we can see from the figures in Table 5.7 that the branches' turnover were generally always growing. And although the increase rates before the change events were lower than their unique mean, they might be still higher than their past levels, similarly in the macroeconomic condition in China. This explanation concerns using Western theories and techniques in a different country. Considering the fact that there are limited relevant theories and studies available coming from Asia, it was unlikely that a similar model from studies taking 'Eastern' as a context that could be adopted to directly compare the results in this study. It is suggested that if possible the pre-change condition is considered by comparing with the past unique mean, and the time lag of 'past' should be reasonably identified in future researches; and attention should be paid to the extent of the historic information that is valid for comparison in works under the research context of China. Moreover, this result might also be due to the fact China is an emerging market. The strategic decisions were usually not planned deliberately and sufficiently before change as the author observed. As mentioned earlier, the market opportunity was more important to be considered than the financial condition, the availability of resources for change was usually considered to be managed after the change decision was made in the implementation stage.

Next, the second part of Proposition 4 that the relationship of the pre-change condition and the change consequences on performance was examined. According to the empirical data collected from interviews, the result did not support the predication of proposition. The majority of the informants did not agree that the change consequences on organisational performance would be reversed after change when compared with the pre-change performance. The informants expressed that there was no clear relationship to be observed in their past work experiences between the change effect and the pre-change performance. For example, the import manager[61] commented:

"*I did not see the performance was simply reversed after the change case. I think this relationship probably talks about the situation at the macro-level. Actually it is not explicit, how and when we could define a point to judge the performance is better or worse than the condition before change. Each change case has a different situation.*"

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[61] This manager represents informant number 22 in Appendix VII.

This was supported by many other manager informants, for example, the internal auditor[62] stated that:

"I think the change effect is mainly decided by whether the strategic decision is made at the proper time to react to market opportunity, and whether we have enough capability to implement it in time.... If this relationship is true, probably we will not dare to change when our condition is good."

The foreign trade manager[63] added:

" It might be true, any organisation might experience a period of bad times and a period of good times, but it is not only related with pre-condition of single change event."

From the financial data records of 14 change events for pre-change performance assessment in the case organization, no clear evidence can be observed. It was indicated by the trends of two financial variables and the growth rate before change from the branch where change took place, comparing those trends after change. As we mentioned earlier, the increase or decrease trends of two financial variables before change were defined by comparing the data in 1–6 months ahead of change with the data in 7–12 months ahead of change. The trends of the two financial variables after change can be concluded by comparing the data in 1–6 months with those in 7–12 months after change. Consequently, two trends can be compared to check whether there was the reverse situation before and after change. Furthermore, the trend of increase rate before change was obtained by comparing the growth rate in the year ahead of the change event with the average in the case organization. Similarly, the trend of growth rate after the change was concluded by comparing the growth rate in the year of change with the average. Then the trends of growth rate before change and after change also could be compared.

Still using the figures of change case five in Table 5.7 as example to explain this part, change case five was initiated in Jan 2001 in the main branch, the pre-change condition was referenced by the branch turnover and net profit in Dec, 2000, comparing with two financial figure in June, 2000, in order to see the trends of these two figures was

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[62] This manager represents informant number 16 in Appendix VII.
[63] This manager represents informant number 2 in Appendix VII.

increasing or decreasing before change. We have known from the first part of Proposition 4 that pre-change condition of change case 5 was that one figure increasing, one figure decreasing before change. We also have known from the result of the testing to Proposition 3 that both financial figures were increasing trend after change. Comparing with the situations before change and after change, there was no clear reverse situation in change case five.

Overall, indicated by two financial variables, the results showed that there were only three out of 14 change cases that were neatly in reverse situation, both trends of the two financial variables reversed after change compared with the pre-change condition. Four change cases kept the same trends, meaning if two financial variables were increasing before change, they kept increasing trend after change; if they were decreasing before change, they kept decreasing after change. They were change case three, six, seven and nine as shown in Table 5.7. The remaining seven change cases all had unclear reverse situations like change case five, only one trend of the two financial variables reversed after change, the other kept the same trend.

Furthermore, by comparing the trends of the growth rate before change and after change, for change case five in 2001, the increase rate in 2000 was 42.73%; the average increase rate of the main branch in the case organization was 27.17%; it was higher than average before change; The increase rate in 2001 was 16.41%, the average increase rate was 27.17%; it was lower than average after change. So there was a reverse situation by this indicator.

Overall, the results showed that six out of 14 change cases had the reversed situation before and after change indicated by the branch growth rate. The remaining eight change cases kept the same trends after change. In four of the six change cases with reverse situations, the increase rate was higher than the mean before change reversing to lower than the mean after change; In another two change cases, it was lower than the mean before change reversed to higher after change. In those eight change cases which kept the same trends, six of eight change cases were with lower trends in both pre-change situation and after change. Overall, there was no clear relationship between pre-change performance and after change performance to be summarized from the financial records by three indicators in 14 change cases of the case organization. Moreover, no obvious inter-correlations can be observed from the results among three

financial indicators.

On the whole, from both interviews and the financial records in the case organisation in the safety industry in China, the results of this section did not show clear evidence to support the prediction of this part of Proposition 4 that the pre-change performance can moderate the change effect. And it did not match the findings of the works carried out by March (1991), Amburgey et al., (1993) and Greve (1999).

The author of this study re-estimated the model of performance assessment that the assessments in the 1–6 months earlier than the change events were compared with the performance of 7–12 months earlier, using a two-year lag for variables measurement, accessed the financial performance of 1–12 months before change, comparing with the performance 13–24 months before change as a pre-change condition, similarly modified to after change condition. The results of this modified analysis were very similar to those shown. As discussed earlier, this could be due to the fact that the research context in this study has the character of high speed economic development and the nature of an emerging market. In addition, the results of this section were arrived by the measurement model which was a qualitative approach; and waits for further study by quantitative methods under the same research context to verify the results.

5.6   Summary and Conclusions

This chapter tested four propositions, modification routines of inertia, the relationship of the extent of niche expansion on performance, the dynamics of change on performance, and the role of pre-change conditions on change initiation and the relation of pre-change condition to change consequences.

The result testing the modification routines of inertia supported the prediction of Proposition 1, and was consistent with existing studies. The empirical evidence demonstrated that the more experience an organisation was with a type of change, the greater the likelihood of adopting the same type of change in the future. The results of the interview transcripts were tested against the results from company documents. Broader indicators of inertia were offered in this chapter, for instance, more influences by a given type of change in the earlier life cycle of the organization, and the effect of elapsed time since the last change of the same type were shown.

Some change type orientation can be observed when examining Proposition 1, leading to the analysis of the effect of various change types in Proposition 2 of this study. Relating two models to assess the degree of niche expansion for seven change cases in the case organization, from the results of interview responses and the results of financial assessment by three criteria, it was shown that six out of seven change cases were in the predicted direction, agreeing with the findings of previous studies, supporting Proposition 2 that there was a significant effect of niche expansion and on performance. The more unrelated the new niche moves are to previous domain, the more organisational performance is likely to be negative. The empirical data also showed that, from the result of assessment by first model of three dimensions, if comparing with three dimensions, new technology was the hardest aspect to solve. The result from the second ecological change type model showed that type I change case had the lowest risks and type IV changes were the most dangerous type of change. Type II and type III change cases had harmful effects on at least one of two financial variables in this study. A possible way to explain why an exceptional Type II change case had a beneficial effect as measured by both financial variables was that it might be due to generalist benefits or the cavity effect of previous products (Hannan *et al.*, 2007).

This chapter then examined the dynamic effect of change on performance measured by the instant change effect and the long-term change effect. This study found that from both the financial data records and the interview responses, the results showed support to the prediction of Proposition 3 that the instant effects of organisational changes were harmful, but declined over time. The organisational change might improve performance in the long run under the context of environmental transformation in the safety and filtration industry of China. The minor discrepancies between the results of interview responses by the technique of frequency count, and the results of financial data assessment were explained. Moreover, the interview responses covered the effect of external environment transformation when discussing the instant effect and long-term effect of case events, for instance, the effect of the SARS explosion in the horizontal and vertical respirator change case. The effect of external environment could possibly explain two exceptional change cases, which had instant beneficial results in this study.

The effect of pre-change performance was considered in the last section of this chapter. To test Proposition 4, two dimensions of pre-change conditions were explored: the role

of pre-change conditions in initiating change; and the relations of pre-change condition and change consequences. The results did not agree with previous research, and did not support Proposition 4. There was no clear evidence to be drawn from both the results of the interview transcripts and the financial data relating to the 14 change cases in the case organisation to support the role of a pre-change condition to trigger changes, and to support the relationship of pre-change condition and change consequence. Similarly, the result from the re-estimated model by using a two-year lag for variables measurement was not significantly different to the previous model. It was explained that it was due to the influences of the context of Chinese economic development and the fact that this is an emerging market. A further quantitative approach to verify the results was suggested.

Finally, the data presented in this chapter indicated that substantial changes did occur in the case organization. This chapter examined the organisational changes along several important dimensions and answered the research question of how and why organisational changes lead to different consequences for performance, from the aspects of change experience, change type, change distances, and pre-change conditions. But it did not cover another important dimension – how and why the processes of organisational changes lead to different change consequences on performance. The effect of change process is analysed in the following chapter.

CHAPTER SIX

DATA ANALYSIS: ORGANISATIONALCHARACTERISTICS AND THEIR EFFECTS ON THE CHANGE PROCESS

6.1 Introduction

The previous chapter discussed the effect of change content on performance along three dimensions: previous types of change experiences, change distances, and dynamic performance variations as consequences of change. This chapter will discuss the empirical findings concerning the process of change and its effect on performance relating to the effects of five organisational characteristics: opacity, asperity, intricacy, viscosity and ambidexterity. The process effect of organisational change was distinguished to be discussed from the empirical results under the research context in this chapter; the model was integrated from both managerial and ecological perspectives. To our knowledge, such an integration is the first in organisational change research within an Eastern context.

6.2 Organisational Characteristics and their Effects On the Change Process

Organisational research needs to address both the change content (what changes) and the change process (how changes occur), as suggested in previous organisational change studies. As discussed before, most research examines only one of these two dimensions. There is a need for greater theoretical guidance in examining the process through which organisational change happens, and to specify the different impacts of change content and change processes (Barnett and Carroll, 1995). This chapter answers the question concerning the effect of organisational change processes. Following the suggestion that internal organisational characteristics or structural conditions are important issues when examining the change process (Kelly and Amburgey, 1991), Propositions 5 of this study concerns their effects on the change length, the relations of change length and change consequences. Proposition 6 examines the effect of process from adaptive view. Based

on the results in the previous chapter, five organisational characteristics and their individual criteria were identified emerging from 25 informants, 34 interviews, and observation notes. They were asperity, opacity, intricacy, viscosity, and ambidexterity, which were measured by the criteria of organisational culture of resistance; surprise/violation unforeseen, broken or unsettled relations among units/complexity; latency; and flexibility and efficiency.

In this chapter, the five characteristics and criteria were used to explain the nature and effect of the change process in the case organization. The relationship between change length and change outcome was tested against the results of the interview transcripts, the observation records and the financial data in this chapter. In order to compare the outcomes of changes with different change lengths in the 15 change cases against the financial records, the change length was defined according to the time expectation of the people who implemented those change cases; it was unlikely that clear finishing points for each single case would be identifiable, and there were no standards to define long or short change processes. The model of this study assessed the 15 change cases in two categories: 1.) change cases with a change time longer than that expected; 2.) change cases with a change time shorter than or equal to that expected. Then, based on the financial performance records of the 15 change cases shown in Table 5.6 in Chapter 5, considering the context of the speed of economic development and the speed of the development of the case organization, from two financial variables' records in both instant and long term financial performance, if any two or more of the four financial indicators showed decreased trends, the change was judged to be generally harmful, and a minus (-) sign was given. If less than two decreased trends were identified in the four financial indicators, the change case was judged to be beneficial, and a plus (+) sign was given. Consequently, the dominant effect of change outcomes for the change cases in the two categories can be observed, and the differences in the effect by change length on change consequences from the financial records of the 15 change cases can be compared. Finally, the results from three sources of evidence can be brought together to draw conclusions.

Following this procedure, it is reasonable to claim that the subjectivity of the analysis in this chapter decreased and the reliability increased (Miller, 1990). Eventually, this study can show that it provides a valid interpretation of the change process to the research questions addressed. The detailed analysis of the empirical data regarding the effect of

organisational characteristics on the change process will be discussed next.

6.2.1 Intricacy and Viscosity

The recent elaborations to inertia theory claim that the effect of the change process results from the length of time of the transformation (Barnett and Freeman, 2001). Previous studies claimed that the time to complete a change depends on the centrality (intricacy) and connectedness of organisational units (viscosity)[64] (Hannan et al., 2007). Proposition 5 of this study predicts that four organisational characteristics- intricacy, viscosity, opacity and asperity - extend the length of the organisational change process, and the length of the change process negatively affects performance. In this section, the effects of intricacy and viscosity are examined first.

The empirical data showed that there were seven change cases involving unsettled or broken relations among units (the criteria for intricacy). Table 6.1 shows, they were change cases two, four, six, ten, eleven, twelve and fourteen, and they were all in main branch (HY) of the case organization.

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[64] Intricacy is defined as a strong and complex pattern of interconnections among an organization's component units (Hannan et al., 2007, P309).
Viscosity is defined as ' the time it takes for a unit to respond to changes and bring local architecture into conformity' (Hannan et al., 2007, P312).

Table 6.1: The coding form from interview transcripts to the characteristics for 15 change cases in the case organization

Change Events	Asperity	Opacity	Intricacy	Viscosity	Efficiency	Flexibility
1.) Disposable Nuisance Dust mask product expansion change case (1,3,5,8,9,13)	3, 5, 9	1,5,8,13		9,13		
	Yes	Yes	No	Yes	No	No
2.) Breast pad product deletion change case (1,10,11)			1,10,11		1,11	
	No	No	Yes	No	Yes	No
3.) Incohesion Material product expansion change case (7,8,11,14,15,17, 22,25)		7,11,14				11,17,22
	No	Yes	No	No	No	Yes
4.) Battery separator product deletion change case (1,8,9)	1,9	1,9	1,8			
	Yes	Yes	Yes	No	No	No
5.) Compounded respirator product expansion change case (2,5,8,10,16,19,25)		2,5,8,16,25				
	No	Yes	No	No	No	No
6.) Plant expansion one (main branch) (1,2,3, 5,8,10,14)		3,10,14	1,2,4,5,10,14			1,2,8,14
	No	Yes	Yes	No	No	Yes
7.) Plant expansion two (SJZ branch) (2,19,20,21,22)				19,22		
	No	No	No	Yes	No	No
8.) Horizontal and vertical compounded respirator product expansion change case (2,4,5,8,13,16,19,24,25)		2,19,24			2,4,5,13, 19,24	2,5,16,19
	No	Yes	No	No	Yes	Yes
9.) Disposable coverall product expansion change case (SJZ branch) (2,4,11,22)		2,11,22				
	No	Yes	No	No	No	No
10.) Filter bag product expansion change case (1,2,3,4,8,11,20)	2,20		3,4	2,8		
	Yes	No	Yes	Yes	No	No
11.) T/C, Cotton work uniform product expansion change case (FZ	2,3,21	2,12,21,23	2,3,4,6,12	21,23		1,2,21

Change Events	Asperity	Opacity	Intricacy	Viscosity	Efficiency	Flexibility
factory) (1,2,3,4,6,12,21,23)	Yes	Yes	Yes	Yes	No	Yes
12.) Plant expansion three (main branch) (1,2,3,6,7,10,11,14,15,16)		3,11	1,11		11,15	1,11,14
	No	Yes	Yes	No	Yes	Yes
13.) Top leader succession in sewing factory (FZ factory) (2,6,11,12,21,23)	2,6,12					
	Yes	No	No	No	No	No
14.) Plant expansion four (SZ branches) (1,4,11,14, 17,18)	1,11,18	4,14,18	1,4,11,18	1,18		
	Yes	Yes	Yes	Yes	No	No
15.) Top leader succession (SZ branch) (1,11,17,18)	11,18	11,17,18			11,17,18	
	Yes	Yes	No	No	Yes	No

The numbers stand for informants, total 25 informants
Top managers: Informants 1, 2, 11,18
Middle Managers: Informants 3,4,5,6,7,8,9,10, 14,17,19
Staff: All the rest

While the informants discussed the effect of intricacy on the change process and tried to solve the problem of unsettled relations among units, the results showed that intricacy did in fact make the change process longer. For example, while talking about T/C, a cotton work uniform product expansion change case, the QC controller of sewing workshop[65] said:

"When we hired new workers for the sewing workshop, the new workers moved into the same accommodation building where old workers from other workshops live. They communicated about their payment rate. As sewing skills are harder to grasp than the processing works of the respirator workshop, the workers in the sewing workshop earned less than the other workshops. Our workers kept flowing to other workshops, we had difficulty controlling this and getting stable labours. Moreover, the workers in other workshops who did something wrong did not care to be corrected any more, they thought they could transfer to the sewing workshop as backup…. We tried to adjust the rules and regulations to prevent this happening for a long time."

There was a similar condition in the change process of change case six (plant expansion one, main branch). While talking about this change event, the production director[66] commented that:

"After we acquired the land, we had space to invest in some new machines and production lines, the workers all intended to work in the new workshop with new facilities since they had higher production capability. We did spend some time making every effort to adjust to try to make the workers stable and each production line occupied by both new and old workers among different workshops."

The situation was quite different in the SJZ branch when they implemented change case seven (plant expansion two). There were no obvious effects of intricacy, the

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[65] This manager represent informant 12 in Appendix VII.
[66] This manager represents informant 5 in Appendix VII.

branch director[67] stated that:

"*We expanded our office area, established the sample show room and hired new staff. It was within a reasonable time to allocate the most suitable places to the new staff. It did not influence our old staff much, they fitted in the new work environment quickly, although they needed to spare some time to train the newcomers, as we had one to one training rules…*"

The result also showed that all informants, each of whom had experience in cooperating with more than one branch in the case organization, commented that the change events in the main branch (HY) were more complicated than the changes in the sub-branches (SJZ branch, SZ and FZ factory) and needed more time to be implemented. For example, the disposable coverall product expansion in the SJZ branch took two months to launch, with no obvious broken or unsettled relations occurring with other units. Whereas, similar to the Type II niche expansion change case in HY main branch, the incohesion material product expansion took almost three years to become a mature product.

These findings from interview transcripts were supported by the evidences in company documents. For example, it was shown that in the battery separator product deletion change case, which had the characteristic of intricacy, implementation took longer than planned. The organisation decided to abandon this product in 1999; however a part of the product line for the battery separator still had to be kept for production until 2001 because of problems of worker arrangements and the relationship with customers. Another example was the filter bag product expansion. Company documents showed that quite a period of time was spent solving the unsettled relationships between workshops. There were several company meetings to discuss issues relating to the balance of new and old technical workers, positions arrangements, and issues regarding a fair payment rate among workshops.

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[67] This manager represents informant 2 in Appendix VII.

Next, regarding viscosity, its effect is usually linked to the impact of intricacy and asperity, as mentioned in the literature discussion. The effects of the organisational characteristics on change length are unlikely to be distinguished, and when examining the effect of change length on change outcomes, they will not be separated for discussion in this study. As Table 6.1 shows, the empirical data demonstrated that there were five change cases from three branches judged to have the characteristic of viscosity due to the existence of latency in the change process. The informants involved in these change cases commented that there was latency in response to the change decisions, obviously lengthening the change period. The results from the interview transcripts also indicated that latency was due to staff resistance to the change decision and in consequences a cooperation problem among the workshops and branches. For example, while talking about T/C and the cotton work uniform product expansion change case, the export manager[68] commented:

"We had a lot of opposition to this decision. Thus, it was difficult to ask someone to collect information about the sewing facilities and technical peoples in this area…the preparation for setting up took a long time."

While talking about the same case, a worker from the uniform workshop[69] added:

"When we asked for support from other departments during the period of workshop setting up, they always had an excuse to put it off. For example, there were in total two technical workers who were responsible for the boiler maintenance, when we installed the steam boiler in our workshop, they put off coming for two days and said they needed to guarantee the normal production of main workshops as their priority…"

It was supported by the administration director[70] of the SZ branch, who while talking about change case fourteen (plant expansion four) in SZ, stated:

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[68] This manager represents informant 21 in Appendix VII.
[69] This worker represents informant 23 in Appendix VII.
[70] This manager represents informant 18 in Appendix VII.

"*We needed the workers who had been familiar with the production and had certain technical skills to support new workers. In order to guarantee stable quality and cost control, half of the workers in our branch were transferred from main branch and half hired locally. However, it was difficult to persuade the workers from main branch to come to our site. Although we promised only half year shift time with higher salary, they were several weeks late for the registration time, and they did not like to follow the advice of supervisors and the rules in our site. When we criticized their work* sometimes, they always responded like: 'this is the way we do in main branch'.*"*

The effect of viscosity lengthening the total time of the change period was seen by the researcher herself while conducting observation during the research period and also when she previously worked in the case organization. The latency was obvious, especially in change cases which were difficult to implemented and when the change was unrelated to the previous domain and to previous change experiences. For example, no sales manager wanted to be responsible for product promotion for the filter bag when it was launched, and it took time to allocate this product to new sales manager. It also took a long time to become familiar with the technology of this product. Another example was that the latency problems were much more serious in plant expansion change case four (when plant expansion was first implemented in SZ branch) than in change case twelve (plant expansion three, main branch). For instance, the author was told that the change length for completing change case fourteen (plant expansion four, SZ branch) was about one and half years. Whereas the change length of change case twelve (plant expansion three, main branch) only took several weeks; it was even shorter than expected. It was interesting to find some connection here to the discussions of previous sections in this study that the change cases that involved viscosity were either the first to be implemented in their branch without previous change experience to reference, or they were Type III and Type IV changes assessed by the niche expansion model, with relatively bigger niche expansion distances. Probably it would be valuable to learn the connections between viscosity, change distances, and change experiences.

Overall, the phenomena of unsettled subordinate relations and latency were shown in some change cases in this study. The effect of intricacy and viscosity lengthening the change process was supported by the empirical results from interview transcripts, company documents and observation notes in this section, and supported this part of Proposition 5 in this study. Latency was normally related to moral resistance, and the effect of organisational culture will be discussed in the next section.

6.2.2 Asperity and Opacity

One important dimension of the structural change model relates to the cultural position of an organization. Proposition 5 of this study predicts that the cultural position will likely make reorganisation periods longer by generating resistance. The results showed that seven change cases involved characteristic of asperity, meaning there was cultural resistance to those change events. They were change cases one, four, ten, eleven, thirteen, fourteen and fifteen. As shown in Table 6.1, three Type III and IV niche expansion change cases were included; and both top leader succession change cases were included. Moreover, as we mentioned, the informants were asked to give their evaluation of the cultural strength of the case organisation as well as other five competitor organizations with which they were familiar. The result of the empirical data showed that the case organisation was thought to have moderate cultural strength as compared with five other organizations in this industry. The results from the interview transcripts also showed that most informants agreed that the moral reaction was likely to make the change process longer. For example, the marketing manager[71] while talking about the battery separator product deletion change case commented:

"*Giving up this product led to some of the workers losing their jobs, and this product line was not useful anymore. Many workers did not work as normal when they heard this news, they tried to transfer to other workshops using any possible relationships. The related managers were also against this decision… Part of production capacity of this line was kept until 2001 (two years later).*"

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[71] This manager represents informant number 9 in the Appendix VII.

While discussing the top leader succession in the sewing factory, as referred to in previous section, the work uniform production director[72] in HD branch, stated that:

"We had to continue to change the manager several times after the first one left, it took almost half a year to finally find a person whom we felt was ok. Then the new leader did not fit into the organization, and the workers did not like him and did not obey his new rules…."

There were similar conditions in change case fourteen (plant expansion four) in SZ branch. The administration director[73] while talking about this change case, as mentioned in the section on the effect of viscosity, commented that the technical workers did not want to transfer to their site, which delayed the registration process by several weeks. And they did not like to follow the supervisors and their rules in their branch. Moreover, the effect of asperity was obvious to the researcher through observation in the SZ branch. Based on some employee discussions in the SZ branch, the researcher knew that a new rule was introduced within the branch following the plant expansion change case. However, it lasted only about two months among part of the staff before they returned to their previous routine. The employees resisted this new rule since they thought it brought them a greater workload.

To summarise, from the results of the interview transcripts and observation notes, the organisational culture of resistance was shown to slow down the change process and lengthen the time of the change process in some change cases of the case organization. In accordance with the work carried out by Sorensen (2002), Hannan et al.,(2003b) and Hannan et al., (2007), the results of this section supported the effect of asperity on the length of the change process in Proposition 5, that cultural resistance is likely to make the change process longer.

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[72] This manager represents informant number 6 in the Appendix VII.
[73] This manager represents informant number 18 in the Appendix VII.

When examining the effect of another important characteristic – opacity – an interesting result emerged in the interviews. The informants agreed that there was a significant relationship between opacity and the length of the change process, but there was not necessarily a positive relationship between them. Some informants commented that the effect of opacity in the change process led to the possibility of either over-estimating the length of the change process or under-estimating the change time needed. They mentioned that sometimes they overestimated the difficulties of a change case, leading to the result that the total change time of the change event was shorter than their expectation. However it only happened in the change cases in which they had previous experience with this type of change. The empirical data showed that there were a total of 11 change cases that had the characteristic of opacity: seven of those 11 change cases were assessed with a change time longer than expected. These change cases were change case one, three, four, five, six, nine, eleven. The other four change cases had a change times shorter than expected. Those were change case eight, twelve, fourteen, fifteen. For example, while talking about the compounded respirator product expansion change case, the lab director[74] stated:

"*We did not think there would be a problem of the filtration efficiency at the finished model, the filtration specification was no problem when we tested the fabric, however the test to the finished product showed that efficiency was very bad after we hot-melted three ply of fabrics together. This result rejected our previous processing methods, and made us to have to look for new facilities. But the direct processing machine was unavailable in the market at that time, as we knew....*"

While implementing change case six (plant expansion one) in the main branch, the situation was similar. Because of limited foresight due to the unavailability of sufficient internal and external information in the case organization, the change process was much longer than they thought it would be. The financial director[75] commented:

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[74] This manager represents informant 8 in Appendix VII.
[75] This manager represents informant 3 in Appendix VII.

"Although we thought everything had been considered, we did not expect the application procedure for land purchasing to local government to be that long, our rent (previous site) was due, the authorization was not on time, and the bank needed the document to approve the mortgage. The timing of many things did not match well...."

Whereas, it was quite a different situation when they implemented change case twelve (the third plant expansion implementation) in main branch, the vice general managers[76] stated that:

"We spared enough time for government document authorization, and time for reorganisation of the workshop. We gave a one month holiday to workers in turn. However, the process was very efficient, it returned to full production capability earlier than we expected. Probably because of the implementation experience of first time, or maybe because we had land to secure loans from the bank..., the related organizations were quite supportive at that time...."

The actual change time was shorter than they expected in other change cases as well. For instance, while talking about the horizontal and vertical compounded respirator product expansion change case (change case eight), as mentioned in the previous section, the foreign trade department manager[77] commented:

"As we were familiar with the product standard, the horizontal and vertical style (respirator) was accepted by our existing customer very soon and was getting more popular, which we did not thought...."

The production director[78] while talking about the same case, added:

"The compounded respirator was launched in 2001, it was hard at the beginning, but

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[76] This manager represents informant number 11 in Appendix VII.
[77] This manager represents informant number 2 in Appendix VII.
[78] This manager represents informant number 5 in Appendix VII.

when we added new model of horizontal and vertical in 2003, it went quite smoothly. ...

According to the empirical data collected in this study, there was a conditional positive relationship between the effect of opacity and the length of the change process in the change cases of the case organization. Generally, the effect of opacity positively influenced the length of the change process, which means that where opacity was more obvious in the change process the length of the change process was more likely to be greater. However, if a similar type of change case was implemented before, the total change time might be shorter than the estimated length. The results of this section conditionally support the work carried out by Hannan *et al.,* (2003b), and Proposition 5 of this study that opacity lengthens the change process. The possible reason to explain an overestimation in change length would be the same as the reason why the change length is underestimated: because the internal and external information of the organisation is often unavailable before the change, the organisation might miscalculate the cost and risks of change due to limited foresight (Hannan et al., 2003b; Jacobs et al., 2008; Williamson, 1975), and because the change process was not in an order easily managed step by step (Mintzberg et al., 1998, Greiner, 1972). Change solutions create further problems in any change stage, although the problems could be solved by certain specific actions, and change process might be stopped by any actions. These actions are not those which are applied to resolve the initial change problems. In addition, the results of this section also implicate the effect of previous change experiences examined in Proposition 1 in this study, it might be interested to explore the relationship between opacity and prior change experiences.

It was noticed that from the results of the empirical data in this study, a limited number of change cases had the characteristics of asperity, viscosity and intricacy in the case organization, as compared with the number of change cases that had opacity. There were a total of five of 15 change events involve the characteristic of viscosity, while seven change cases had asperity and intricacy. In contrast, eleven change cases involve opacity. One reason for the difference might be because China is an emerging market

with rapid economic development. Thus, the organization's strategic plans were not likely to be planned as deliberately as in a mature market, and might explain why opacity was more obvious than the other characteristics in the change processes. Moreover, the lower level of effects of viscosity, asperity and intricacy in the change cases might be explained by Chinese culture. For example, it is claimed that Chinese firms care greatly about the feelings of staff, and people spend much time on dealing with interpersonal relationships (Li, 2007; Lin, 2005; Lu, 2007; Zhong, 2007). Furthermore, Chinese firms are normally hierarchical, and people usually show more respect to the superior in the hierarchy. Those cultural traits might decrease the levels of resistance to change and negative impacts of asperity, intricacy and viscosity, and possibly shorten the change process. Further direct empirical evidence regarding the effect of Chinese culture on change process is suggested in the future studies.

In this section, the effects of four organisational characteristics that are claimed to lengthen the change process were examined. The relationship between change length and organisational performance will be discussed next.

6.2.3 The Length of the Change Process and the Change Consequence on Performance

The length of change time as a major effect of the change process, from ecological point of view, leads to various change outcomes. Agreeing with previous researchers, Proposition 5 predicted that the length of the change process negatively affects change consequence on performance. To clarify, the change length examined in this study derived from the joint effects of the organisational characteristics. The empirical data collected in this study showed that all 25 informants agreed that the shorter the change process was, the better the change outcomes would be. Some informants commented that the new change case diverted their attention, and created issues about how to balance the time for their daily jobs and that for the new project. For example, the foreign trade department director[79], while talking about the compounded respirator

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[79] This manager represents informant 2 in Appendix VII.

product expansion change case, stated that:

"Of course, shorter is better in the change process. Long processes influence not only the outcome of the new project, but also our previous works and products. For instance, I was responsible for new product development and foreign trade department. When I focused on the compounded model development, I had to give up some business visiting trips and exhibition attendance until this new product was successfully launched. It potentially influenced the sales of our previous products. And if the new project was not going smoothly, usually we need to seek more money and more talented persons, and this is not easily solved…."

There was a similar situation in the change cases in SJZ branch. While talking about the disposable coverall product expansion change case, as mentioned in the previous section, the export manager[80] said:

"It distracted our attention from our main product, if we spend the same time on the main product, probably we can achieve much greater orders than the orders of the disposable coverall…."

The negative role of the length of the change process on both the new change project and previous products was shown. This was obvious to the researcher herself while conducting participant observation in the case organization. For example, when the organisation purchased the land for the plant expansion in main branch and the plant expansion in the SZ branch, according to the discussion with the managers in these two branches, the author was told that they were big projects that induced cascading change. The projects required that the money and people needed to be arranged in balance for purchasing the land, establishing the building, investing in the new facilities, hiring new workers, arrangement of the new product line and setting new rules etc. Simultaneously, the production of existing products needed to be maintained, and a watchful eye kept on the labour shifts between workshops and branches. It was

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[80] This manager represents informant number 21 in Appendix VII.

impossible to plan all this in sequence well in advance, and it was unlikely that normal production would not be affected. Another example: as the new change case projects in the case organisation were usually dealt by a team, in which the team members were picked out from several departments who had to be responsible for their daily job at the same time, they told the researcher that they normally needed to spend most of their working time for the new project, and if there any problems in their normal daily works, they had to work overtime to deal with them. This affected their performance. For example, when the filter material production director was responsible for the incohesion material development, he did not supervise the product line of the previous fabric as frequently as before. The waste material ratio doubled, and the filtration efficiency was not stable.

Next, the result of the relations between change time and performance from the interview transcripts and the observation notes were further tested against the financial data records. Following the techniques mentioned in the previous section, based on the result of opacity, the 15 change cases involving opacity were divided into two categories: 1.) change cases with a longer change process than that expected; 2.) change cases with a process shorter than or equal to that expected, with the purpose of comparing the change outcomes to those two categories. As the results show, seven of 15 cases had a longer change time than expected, four change cases had shorter times than expected, and the remaining four were not evaluated with the characteristic of opacity, meaning their change times almost equalled those expected. Thus seven change cases were in the first category and eight cases were in the second category as Table 6.2 shows. Consequently, according to the financial performance records for the 15 change cases (Table 5.6 in Chapter 5), which were extracted from company documents, the outcome of each change case was assessed, and the dominant effect was concluded by frequency technique to the change cases in each category. The results are shown in Table 6.2. It shows that in the first category covering seven change events which had longer change times than expected, four change cases had a harmful effect and three change cases had a beneficial effect. On average, the dominant effect for this category of change cases was harmful, although the harmful effect is only

slightly more frequent than the beneficial effect. In the second category, covering eight change events which had change times shorter or equal to those expected, the results showed that six change cases had a harmful effect and two cases had a beneficial effect. Hence, the effect was considered as harmful when the length of the change processes were shorter than or equal to their expectation. Overall, by looking at Table 6.2, no matter if the change length was shorter, equal to, or longer than the expectation, in both categories the dominant effects shown by financial data were harmful.

Table 6.2 : The assessment of change length on performance for 15 change events

Assessment result for change length		Change outcome (dominant effect from financial data record)	Dominant Effect
1.) Change cases with a longer change length than expected	Change Case No. 1,3,4,5,6,9,11	(-) (-) (+) (+) (+) (-) (-) 1, 3, 4, 5, 6, 9, 11	(-)
2.) Change cases with a change length shorter or equal to that expected	Change Case No. 8,12,14,15; 2,7,10,13,	(-) (-) (+) (-) (-) (-) (-) (+) 8, 12, 14, 15, 2, 7, 10, 13	(-)
The numbers here represent change case number; This is based on the results of Table 5.6 in Chapter 5 and the result of Section 6.2.2 of this study;			

The fact that the change cases with lengthier change processes were generally harmful could be at least partly due to the effect of the change process. This was consistent with the predication of Proposition 5 of this study. The reason for the generally harmful effect even of cases where change times were shorter or equal to expectations, probably could be explained as follows. In the change cases of this category, it can be concluded that the effects of the change content were harmful, and the effect of change content in those change cases were stronger than the effect of the change process. Thus the effect of the change process relating with the change length was not obvious when comparing it to the effect of the change content. Although the change process was short and not necessarily disruptive, the negative content effect dominated, the effect of the

change process resulting from the length of time of reconstruction in transformation was covered by a stronger content effect and could not obviously be observed in those eight change cases in the second category.

The author of this study re-estimated the model of performance assessment that if two or more of four financial variables decreased from both instant and long term effect, the negative (-) mark was given; and if less than two of four variables decreased, the positive (+) mark was given. By adding a third financial variable – the trend of increase rate in the year of change case – the model was modified so that if over two of four financial variables decreased from both instant and long term effect, the negative (-) mark was given, and the general performance consequence of the change case was evaluated as a harmful effect; same as before, if less than two of four variables decreased, the positive (+) mark was given. However, if two financial variables decreased, and the other two increased in the instant and long term effect of the change case, the trend of increase rate was introduced. If the trend of increase rate in the year of the change case is higher than the mean, the general performance effect to this change case was considered to be beneficial; whereas if the trend of increase rate in the year of the change case is lower than the mean, it was considered harmful. The results of this modified analysis were the same as those shown except for one change case-change case eight in the second category. The evaluation to the effect of change case eight became beneficial in the second model. As we can see from Table 6.2, based on the results of the modified model, the dominant effect in the second category was still a harmful effect. There were still no obvious different effects resulting from the length of the change processes on performance to be seen in the 15 change cases of the case organization. From the results of both assessment models, it was reasonable to claim that the changes were generally harmful; the effects of the change content were more obvious and more harmful than the effects of the change processes in the 15 change cases of the case organization. The change contents, for instance, change type, change distance, and change experiences, were relatively more important than the change process in the case organisationin the safety and filtration industry in China. This result could be possibly explained by the effect of Chinese culture, as mentioned earlier, as

Chinese firms are normally hierarchical, people usually show more respect to the superiors in the hierarchy of a business organization, the level of change resistance might be lower than in the organizations of Western countries, thus the impacts of the factors of asperity, intricacy and viscosity might not be very strong, and so lead to an inconspicuous effect of change length.

In summary, from the assessment results of the financial data, the relationship of change length and change consequence on performance was not clearly observed in the 15 change cases under this research context. However, the interview responses and observation records demonstrate that the length of the change process negatively influenced the change outcome. Considering that the financial data may possibly reflect the effect of many other elements occurring during same periods of change events, and considering this relationship was supported by two of three sources of evidence, on balance, it was concluded in this section that the length of the change process negatively affects performance. Agreeing the work carried out by Nee & Su (1990), Burgelman (1991), Hannan *et al.,* (2003a) and the work of Hannan *et al.,* (2007) , this part of Proposition 5 was supported.

Overall, the results of the empirical data in the above sections confirm the views in organisational ecology studies, that four organisational characteristics - intricacy, viscosity, opacity and asperity – in structural conditions extend the length of the organisational change process, and the length of the change process negatively affects performance, from both the results of the interview responses and the observation records under the research context of the safety and filtration industry in China. There was no clear evidence from the financial records in support of a relationship between change length and change outcome. Moreover, the possibility that the change length could be over-estimated due to opacity was also shown from the interview responses. It was based on the condition that similar change types were implemented before.

It was also shown that eight change cases had a change time shorter than or equal to expectations. This leads to a discussion of the possibility of efficiency in the change

process in the next section.

6.2.4　Flexibility and Efficiency

Prior research has claimed that the organisation could simultaneously have exploration and exploitation capabilities, which enable firms to adapt over time, and that efficiency and flexibility do not have to be a trade-off in the organisational development process (Adner & Helfat, 2003; Gulati et al., 2002; Macpherson et al., 2004; O'Reilly & Tushman, 2008; Teece et al., 1997). These notions of abilities are central to adaptive theoretical views. As we discussed earlier, there are some theorists who criticize dynamic capabilities as 'terminology haze' and argue that these capabilities remain vague (Winter, 2000). In this study, as discussed before, we escape from the binary distinction between two camps of adaptive and selection, without assuming that either one alone can explain the change process and its effects. In this section, Proposition 6 predicts that the ambidexterity (the capability of simultaneously achieving exploration and exploitation) is possible in the organisational change process. As we mentioned in the previous section, ambidexterity in this study was measured using indicators of the organisational characteristics of flexibility and efficiency in the change process.

According to the empirical data collected in this study, there were four change cases out of fifteen assessed with the characteristic of efficiency. The change length of three of them was shorter than expectations and one change case was equal to expectations, as we can see from Table 6.2. They were change cases two, eight, twelve and fifteen (shown in Table 6.1 on P169). Five cases of the 15 had the characteristic of flexibility in the change process. They were change cases three, six, eight, eleven, and twelve. Simultaneously, there were two change cases the characteristics of both efficiency *and* flexibility: the horizontal and vertical compounded respirator product expansion change case (change case eight) and the third plant expansion change case (change case twelve, main branch). Both change times were shorter than expected, as the above result has shown.

From the empirical data in the company documents, it was clearly shown that from CE products standard test reports in the case organization, the testing of the horizontal and vertical model was based on the testing result of the compounded model. The interviews suggested that the horizontal and vertical model in this change case was based on the change case of the compounded respirator product expansion change case, which took place two years ago. As mentioned in the previous section, the foreign trade department manager commented that the new model (horizontal and vertical style) was accepted by the existing customer (the customer for compounded model) very quickly because they were familiar with the processing method, product standards and market rules. It was supported by some other informants, for instance, while talking about this change case, the internal auditor[81] added:

"*When we applied NOISH certificate for our first model (compounded model), I remembered it was a harsh process, the audit report- 'Noish corrective action request' which was given by the auditors from US government showed that we needed to improve about fifteen major non-conformances and twenty minor corrections. It took a long time to develop it. Comparing with the second time when we applied for horizontal and vertical model, we only had eight major non-conformances and twelve minor corrections for this product's NOISH certificate. Consequently, the process of achieving the product certificate for horizontal and vertical model was much quicker than first time.*"

The same condition occurred in change case twelve (plant expansion three). The company documents showed that the expansion in 2006 was the fourth time they had undergone plant expansion; there were in total five instances of plant expansions occurring in the six-year period between 2001 and 2007. This represented five occurrences of the same type of change, all very close to each other, the next one was based on the previous change, as we mentioned in the discussion of Proposition 1. From the results of the interview responses, it was also shown that it was based on the previous plant expansion change experiences. For example, while talking about this

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[81] This manager represents informant 16 in Appendix VII

change case, the technical advisor[82] who was responsible for the product line adjustment in the new workshops, commented:

"*I was surprised that at that time the production was back to full capacity so soon, the workers were familiar with the new facilities, as the new one had very similar operational function as the machines imported in the previous expansion. The production waste ratio was under control within a short time, it was also much shorter than the previous conditions that when we imported new facilities and adjusted the product line in the first several times.*"

It was supported by several other informants, for example, as we presented before, the vice general managers[83] stated that:

"*We spared enough time for government document authorization, and time for reorganisation of the workshop. We gave a one month holiday to workers in turn. However, the process was very efficient, it returned to full production capability earlier than we expected. Probably because of the implementation experience of first time, or maybe because we had land to secure loans from the bank…, the related organizations were quite supportive at that time….*"

Some informants commented that although change case twelve (plant expansion three) had a complex process, and there were some unsettled phenomena in the change process, they were quite flexible to deal with such a big project in a timely manner. For example, the general manager[84] said:

"*Workers shifting between product lines and workshops had happened before, we had readjusted the rules several times. We can say at that time it was mature to better control this, and the workers rearrangement was shorter than in previous workshop expansions….*"

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[82] This manager represents informant 15 in Appendix VII.
[83] This manager represents informant number 11 in Appendix VII.
[84] This manager represents informant 1 in Appendix VII.

The technical instructor[85] added:

"*We did not plan a fixed date for plant expansion; we knew it would be a long complex process including something unforeseeable, it was normal. But that time we were not passively waiting the problems, we tried to arrange reasonably the workers in the new product line according to previous experiences, to add a extra nozzles for new facilities in order to reduce the length of the running-in period and to reduce the cost, it worked.*"

Similarly, while talking about the horizontal and vertical compounded respirator product expansion change case, the export manager[86] stated:

"*The new French standard (of compounded respirator) is up to 99% against solid and liquid aerosols. Usually higher filtration efficiency would cause higher breathing resistance; we enlarged the effective filtration area of this model and passed the test successfully. At the same time, we assisted Aearo [a US company] to achieve a patent in the* US by developing our model into a pleated style to better solve this problem.*"

From the results of the interview transcripts and the company documents for those two change cases, the characteristics of efficiency and flexibility were both shown in the change processes. Additionally, the effect of previous change experiences of a certain type on the possibility of efficiency and flexibility can be observed in this section. This effect was seen by the researcher herself while she participated in the change cases while working in the case organization. For example, after the first product standard certificate was achieved, while implementing a yearly audit for the new model of horizontal and vertical respirator, the author joined the whole auditing process. It was much easier to communicate with the external audit members coming from the US government, and it was a happy process instead of a lot of arguments and discussions

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[85] This manager represents informant 14 in Appendix VII.
[86] This manager represents informant 19 in Appendix VII.

as in the first time. It was also much quicker to get responses from them when asking for advice from their different departments. Also, it can be claimed that from the observation, the new product expansion was almost a kind of modification routine in the case organization; they had long term product development consistency. For instance, they have an agreement with one of their long-term customers to cooperate with each other for new product R&D every year, and they have a strategic plan that specifies what percentage the new product should contribute to total turnover each year. Furthermore, the author was told that there was efficiency and flexibility in cooperating with international customers when doing R&D, as they can share their resources and can have a kind of synergy, compared with the previous independent working methods and processes.

To summarize, from the results of the interview responses, the information extracted from the company documents, and the observation records, the empirical data showed that there were possibilities of simultaneously achieving flexibility and efficiency in the change cases under this research context, only if the organisation had previous change experiences of a certain type. Although there were a limited number of change cases supporting the result - only two out of 15 change cases had both efficiency and flexibility characteristics -, which demonstrated that it was normally hard and rare to achieve ambidexterity in organizations, the results of this section supported the views in the adaptation theoretical camp, and supported Proposition 6 of this study that the ambidexterity (the capability of simultaneously achieving exploration and exploitation) is possible in the organisational change process, but with the condition that the organisation has prior experience with that certain type of change. The data analysis in this chapter suggested a possible valuable way which adds to the new stream that disentangles the propositions to directly examine the elements influencing the change process and the consequences on performance, escaping from the binary distinction between organizational adaptation and selection. The data analysis and results of this chapter propose they can be complementary.

6.3 Summary and Conclusions

Taking into consideration that almost all of the previous studies of organisational change were carried out in Western countries, the need for organisational studies to be carried in the research context of China is noted (Bruton and Lau, 2008). Also considering the suggestions in previous studies to separately examine the effects of the change process and change content (Barnett and Carroll, 1995), this chapter investigated the effect of the organisational change process associated with the effect of organisational characteristics in the context of the safety and filtration industry in China.

By looking at the empirical data collected in this study through semi-structured interviews, company documentation, and participant observation, Proposition 5 was supported: four organisational characteristics - intricacy, viscosity, opacity and asperity - extend the length of the organisational change process, and the increased length of the change process negatively affects performance, as argued by ecological theories. However, there were two qualifying conditions in the data analysis results: 1.) the effect of opacity also made it possible to over-estimate the change length; this only happened in the change cases in which a similar type of change had been implemented before and the managers had relevant change experience; 2.) clear evidence from the financial data of the 15 change cases was not shown to support the relationship of change length and change outcome by two assessment models. However, this study not only concerns the financial performance which is as one dimension of change consequences, but also considers the general performance of change cases as one way to evaluate the change outcomes of the 15 change events. From the interview responses, a rich picture of performance evaluation as a change consequence relating with the effect of organisational characteristics was presented. The negative result between change time and change outcome was clearly shown, and this result was validated by the observation records.

Furthermore, without assuming that one school alone can interpret change and its

effect, this study examined the possibility that ambidexterity, which is an adaptationist concept, can also explain change. The author tested the characteristics of flexibility and efficiency simultaneously in the change processes relating to the 15 changes. Not surprisingly, the results showed that only two change cases were evaluated as having both characteristics, which was rare but followed the direction of the predication of Proposition 6 in this study; and it was based on the condition that only if a similar type of change case has been implemented before and the managers had previous experiences. The effect of previous change experiences can be observed here again. Finally, the results of this section conditionally supported Proposition 6 and agreed with previous studies in the adaptation theoretical camp. By looking at the data analysis to the empirical data in this chapter, the results proposed that the theories of organisational adaptation and selection were complementary. Parts of the change processes were interpreted better by one view than the other. This suggests researchers should examine the elements in the change processes by considering both theories.

Having looked at the effect of the change process, the next chapter will combine all the results of the previous chapters from several dimensions in the effects of both change contents and change processes. Moreover, it will explain the main contributions of this study to theory and to managerial practice to assist managers to better understand organisational change, and to assist solving associated problems. Finally the impact of this doctoral thesis can be concluded. Some limitations of this study will be considered, and some recommendation for future studies will be provided.

CHAPTER SEVEN

CONCLUSION

7.1 Introduction

This study is the first to investigate the effects of organisational change content and organisational change process in China. It aims to empirically examine various organisational change types, change degrees and their dynamic consequences on performance. It also aims to identify the effect of organisational characteristics and the change length in the change process, which affect the outcome of organisational change. The study was applied to the safety and filtration industry in China, examining 15 change cases within three branches in the case organization. Interviews, documentation and observations were used to collect the data for this thesis with the interviewees representing different levels of work including senior, middle managers and workers who experienced change cases and represented both change decision makers and implementers.

Four main sections are presented in this chapter. The first section will restate the main findings of this thesis. The second and third sections will discuss the main contributions to theories and practices, whereas the research limitations and future research recommendations will be discussed in the last section of this study.

7.2 Review of the Main Results

Organisational change is one of the most popular and interesting topics in business and

among academics. The strategic change decisions are among the most important decisions carried out in an organization. The consequences of change on performance will affect its competitive position and future. The sensitivity of the subject of organisational change at a strategic level made it unlikely that the researcher could gain full access to all information relating to this topic from other organizations in the safety and filtration industry in China, and explains why only one organisation agreed to be fully investigated in this research.

The research question of how and why the organisational changes lead to different consequences for performance was addressed from the perspective of both the content of change and the process of change by testing six propositions. In determining the effects of change content, the study examined the change experiences, change type, change distances, and the performance measurement model was made for assessing the dynamic consequences of change. In terms of the effects of the process of change on performance, the investigation focused on the organisational characteristics and the length of change. The research question was answered in this study by adopting a qualitative approach. The data collection methods were interviews, observations and documentation. Some of the findings of this study confirmed the conclusions of the main organisational change studies, such studies are Amburgey et al., (1993); Barnett & Carroll, (1995); Boeker (1997), Delacroix & Swaminathan (1991), Dobrev et al., (2003), Greve (1998,1999); Hannan et al., (2003a, 2003b, 2007); Haveman (1992); Henderson & Clark (1990), O'Reilly & Tushman (2008), Singh et al., (1986) and Sorensen (2002). The main findings of this study are presented below.

7.2.1 The Effect of Previous Change Experiences

The result for testing the modification routine of inertia, that the effect of previous change types on the likelihood of adopting the same type of change in the future, was consistent with prior studies (Amburgey et al., 1993, Feldman and Pentland, 2003). The empirical data showed that the majority of informants within three branches of the case organisation had used the same type of change in their past work experiences, and

would adopt the same type of change again in the future if possible. Following the frequency counting and prevalence effect techniques, the result of the interview responses showed that there were nine organisational change cases out of 15 with positive results. The effect of the previous change type on the likelihood of re-adoption in the future was confirmed in the majority of change cases.

Furthermore, the result was tested against the evidence from company documents. It was shown that there was a high rate of re-adoption of the same type of change in the company historical records. For example, there were nine instances of product expansions and five instances of land acquisition in the case organization. Thus, the results here from both interview responses and company documents, supported the prediction of Proposition 1 in this study: the more experience the organisation has a type of change previously implemented, the greater the likelihood of adopting the same type of change in the future.

In addition, to summarize the change events in the case organisation in chronological order, it can be seen that the results offer some support to the broader implication of inertia, that an early occurrence of a given type of change in the life cycle of the organisation increases the probability of subsequent instances of the same type of change (Amburgey et al., 1993). For example, the niche expansion change case was the first change case in the case organisation which happened within the first few years after the company was founded. Consequently, the niche expansion change type was the change type which was adopted most frequently in the case organization, as the document shows. Moreover, documents showed some support for the effect of elapsed time since the last change of the same type, as in the work of Cyert and March (1963). The elapsed time since the last change of the same type affected the probability of subsequent instances of the given type of organisational change: Five instances of plant expansions in the main branch of the case organisation all occurred between 2002–2008 (within six years), all very close to each other.

7.2.2 Change Distances and their Effect on Performance

Confirming the findings of Hannan *et al.,*(2007) and Haveman (1992), the result of this section showed that there was a negative relationship between the extent of niche expansion and performance. The more unrelated the new niche was from the previous domain, the more organisational performance was likely to suffer. Two models were used to measure the extent of expansion associating seven niche expansion change cases: the related/unrelated model assessed by three dimensions of customer, product and technology; the ecological four change type model with total three criteria. From the first model, based on whether a change was related or unrelated for seven change cases, the different effects on performance were clearly shown: unrelated change were more harmful than related changes based on the financial data. From the interview responses, all 25 informants agreed that it *did* matter for performance whether the new product expansion was related or unrelated to the previous domain; unrelated change expansion carried more risks and was more likely to have negative consequences. In addition, the empirical data of this section also pointed out that if comparing with three dimensions of customer, product and technology in the first model, new technology change was the hardest to be solved in the organisational change cases, this was consistent with the view in the work of Barnett & Carroll (1995).

By using an ecological change type model to assess the extent of niche expansion, the characteristics of opacity, asperity and intricacy were counted for seven niche expansion type of changes. Comparing the results of this model with the related or unrelated model, two unrelated change cases were assessed as Type IV (gap-creating distant expansion), and effects on performance were evaluated as harmful based on the interview responses. Type I, II and III change cases were all in the related category, with the exception of one case. The only positive change consequence was found in Type I (Continuous expansion) category – the horizontal and vertical compounded respirator change case. The performance consequences for the remaining Type II (Distant expansion) and Type III (Gap-creating continuous expansion) change cases included both negative and positive effects by primary evaluation. In addition, the

dynamic effects on performance were referred to by the informants in this section, which leads to the discussion in the next section.

The results of performance consequences based on interview transcripts were consistent with the result of financial records. According to three financial criteria: branch turnover and net profit performance in the year of change, and the trend of increase rate in the year of change comparing with the mean increase rate of case organization, the result of the financial records showed that a Type I change event – horizontal and vertical compounded niche expansion – in the related category involved an increase in both turnover and net profit in the branch of change took place. The growth rate in the year of change was higher than the mean increase rate of the case organization. Two Type IV change cases in the unrelated category had the financial effect that both branch turnover and net profit decreased, in accordance with the harmful change effect evaluation by interview informants. Three of four change events in Type II and Type III categories had one financial variable increase and the other decrease in the year of change. This might explain why the interviewees commented on both negative and positive effects for those change events. It was shown that the rate of increase in the year of the change in six out of seven cases, were all lower than their average in the case organisation (except the Type I change case).

The trend of national GDP's increase rate in China was used to compare the trend of increase rate in the case organisation of the safety and filtration industry, in order to see the adjustment of general economic development and inflation effect. However, from the results of the comparison graph, the impact or the adjustment correction of national development and inflation on the change events' effect on performance in the case organisation was very slight and can be considered negligible in this study.

Overall, from both the results of the interview responses and the organisational financial records relating to seven niche expansion change cases, it was shown that the Type I change case carried the lowest risks and had a beneficial effect; Type IV changes were the most dangerous type of change and had a harmful effect. Type II and

Type III change cases involved a harmful effect on at least one of the financial performance variables in this study excepting one case. Six out of seven estimates were in the predicted direction. In line with previous studies (Audia et al., 2000; Barnett & Carroll, 1995; H.R. Greve, 1999; Hannan et al., 2007; Miller & Chen, 1994), these results support Proposition 2 of this study: there was a significant relationship between extent of niche expansion and performance. The more unrelated the new niche becomes from the previous domains, the more organisational performance was likely to suffer.

7.2.3   Change and Dynamic Performance

7.2.3.1   Dynamic Change Consequences on Performance

The analysis and findings of this section were divided into two parts. First, the dynamic performance consequences were examined as either an instant change effect or a long term change effect. Second, the role of the pre-change performance condition on initiating change and the relations of the pre-change condition and the change consequences relating to the 15 change cases in the case organisation were tested.

In the first part, from both financial data records and interview responses, the results showed support for Proposition 3 - that the instant effect of organisational change was harmful but declined over time. Organisational change might improve the performance in the long run under the context of environmental transformation, in the case organisation in the safety and filtration industry of China.

By following the technique of frequency counting, the results from interviews showed 14 out of 15 change cases had instant harmful effects. According to financial performance assessment model, the financial records showed that in eight out of 15 change cases, both branch turnover and net profit performance decreased within six months of the change, while in five of 15 change cases, one of the financial variables decreased. Only two changes cases demonstrated the effect that both branch net profit

and turnover performance increased. On balance, this research indicates that organisational changes had an instant harmful effect on performance, agreeing with the studies carried out by Nelson and Winter (1982), Haveman (1992) and Hannan *et al.,* (2003a). Additionally, there were no obvious differences in the instant effect among the four kinds of changes which were selected in this study: plant expansion change, niche expansion change, product deletion and top leader succession change.

The reason that two change cases experienced an instant benefit was due to the effect of external environment variation and previous experience with a similar change type. It supported the concept of relative inertia (Hannan and Freeman, 1984), and was consistent with the work carried out by Haveman (1992) and Singh et al., (1986) that if the environment undergoes a transformation, and if the new changes were based on the previous domain, the losses associated with an organisational change were less than the gains from the new environment, and might benefit the organization.

In terms of the long term effect of change, from the results of the interviews, 11 of 15 change cases experienced positive long term performance. The exceptions were two product deletion change cases, and two top leader succession change cases. From the result of the financial performance assessment, the financial data showed that in nine of 15 change cases, both branch turnover and net profit performance increased in the 7–12 months after the change, five cases had one financial variable increase, and only one change case experienced a decrease in both branch turnover and net profit. On the whole, the long term effect of organisational change was regarded as positive from the result of financial data in the case organisation of the safety and filtration industry of China. Again, there were no obvious differences in the long-term effects among the four kinds of change events selected in this study.

There were two discrepancies between the interview transcripts and the financial data for assessing the instant change effect and long-term effect on performance. The possible reasons for these discrepancies were covered in that section. For example, the interview responses showed a beneficial evaluation of the long-term effect of the

horizontal and vertical respirator expansion change case, whereas the result of the financial data showed a harmful long-term effect. The managers' responses and company documents showed that this was due to the effect of the SARS disease explosion, which happened in the year of change. All the respirator orders were pooled to prevent a further explosion in the first half of that year, thus the orders in next half-year were relatively lower when compared with the peak time.

Overall, from the evidence of both the financial data and the interview responses, a long-term beneficial change effect can be seen. The effects of external environment variation on the change effect were shown in this study. This part of the results corroborated the work of Singh *et al.,* (1986), Delacroix and Swaminathan (1991), Kelly and Amburgey (1991) and Haveman (1992), and supported Proposition 3.

7.2.3.2   Pre-change Performance and Change Consequence

The results of the empirical data in this section surprisingly did not show support for Proposition 4. For assessing the role of the pre-change performance condition on change initiation, the result of the interview showed that the informants did not agree that poor performance helped to promote organisationalchange. Detailed comments from the informants were supplied. There was no clear conclusion to be drawn from the financial records of the 15 change cases to support this in this study. The results for testing the second part of Proposition 4 – the moderated effect of the pre-change performance condition on change consequences –found that the majority of informants did not support the relationship of pre-change condition and change consequence. Again, there was no clear evidence to be seen from the financial data of the 15 change events in the case organization. The author then re-estimated the model using a two-year lag for variable measurement -- comparing the financial performance in the year of change with that in the year following the change, instead of performance 1–6 months following the change compared with that of 7–12 months. The results were very similar to those in the previous model. No obvious conclusion of reverse performance can be drawn. A quantitative approach for further verifying the results

was suggested.

The results of this part did not support Proposition 4 of this study, that poor performance helps to promote organisational change. Pre-change performance can moderate the change effect, comparing the pre-change performance with the organisational average performance, the change effect on performance is more likely to be reversed. The evidence in this thesis and research context did not support the findings of previous studies (Amburgey et al., 1993; Henrich R. Greve, 1999; March, 1991; Miller & Chen, 1994). It was explained that this might due to the influences of the context of Chinese economic development and the fact that China is as an emerging market.

7.2.4   The Change Process and Organisational Characteristics

Five organisational characteristics associated each measuring criteria were identified in this study in order to measure their effects on the change process within the 15 change cases in the case organization. Although these characteristics and related criteria were discussed in previous studies, they were not empirically tested (Hannan et al., 2007). These characteristics combine those found in previous studies (O'Reilly and Tushman, 2008, Hannan et al., 2007). Most of them had more or less same effect as predicted in the existing studies; one was conditionally supported. There are three main parts to the findings of this part.

7.2.4.1 Organisational Characteristics and the Length of the Change Process

In the first part, it was found that the organisational characteristics of intricacy, viscosity, asperity and opacity extended the length of change time from the results of the interview responses, the observation records and some company documents related to the 15 change cases in the case organization. Intricacy was measured by using the

criteria of unsettled or broken subordinate relationships (Barnett and Freeman, 2001, Hannan et al., 2007). The results showed that seven out of 15 change cases involved intricacy. The interview responses suggested that the effect of intricacy did make the change processes longer. The prediction was also tested against company documents. In addition, it was mentioned that most of the informants agreed that the change events in the main branch (HY) were more complicated than the changes in the sub-branches (SJZ branch, SZ branch and FZ factory) and needed more time to be implemented.

The second characteristic concerned the latency problem in the change process due to the condition of viscosity. The effect of viscosity was usually discussed in relation to the effect of intricacy and asperity. The effects of these characteristics on the change length and change outcomes relating to the change cases were not distinguished in this study. The result of this section showed there were five change cases from three branches in the case organisation that were evaluated with the characteristic of viscosity. From the interview responses and observation results, it can be seen that latency in response to the change decision lengthened the change periods. It showed that latency was usually due to the moral reaction of employees to the change decision and the cooperation among different workshops and branches.

The third characteristic, asperity, refers to cultural resistance to the organisational change process, and it is recognised in many of the previous organisational change studies (Hannan et al., 2003b; Hatch & Schultz, 2002; Jacobs et al., 2008; Ravasi & Schultz, 2006;(Sorensen, 2002). The results from interviews and observation notes found that the organisational culture of resistance slowed down the change process and lengthened the time of the change process. Seven change cases were involved asperity, including both top leader succession change cases and three niche expansion change cases, which all were Type III and Type IV change cases with bigger change distances.

The fourth characteristic of opacity was considered by the criteria of surprise or unforeseen violation in the change process. The result concerning this condition was surprising. It was found that opacity led to underestimation of the change length, which

supported the discussion in the previous works (Hannan et al., 2003b; Hannan et al., 2007). But it was also possible that if the organisation had experienced this type of change before, the change length was overestimated and the change case was finished *earlier* than expected. There were 11 change cases with some degree of opacity, seven had a longer change process than expected, four were shorter than expected in three branches of the case organization, and the remaining four change cases had a change length roughly equal to their expectation. The possible reason for this result was explained.

This thesis found that the above four characteristics lengthened the change process in the 15 change cases within three branches in the case organization, although these characteristics might vary in their degree of influence in the change process. Furthermore, comparing the degrees of the effects by four characteristics, it was found that opacity had a stronger effect than the other three characteristics. It was explained that it was probably because China is an emerging market with a high speed of economic development, and also possibly because within Chinese culture people usually show more respect to the superior in the hierarchy of a business organization. It is suggested that further direct empirical evidence of the effect of Chinese culture on change process is sought in future studies.

7.2.4.2 Organisational Change Length and Change Consequence on Performance

From the assessment of the results of the financial data records, the relationship between the length of the change process and its effect on performance was not obviously observed in the 15 change cases. The model categorized the change cases into longer than expected change cases, and change cases that were equal to or shorter than the expectation. Performance was measured by two financial variables accessed twice. The results showed that the change cases which had a longer length of change process than expected were generally harmful; while change cases had a change length shorter or equal to that expected, the effects were also generally harmful. For the

change cases longer than expected, the reason can be claimed that the harmful effects of these change cases were at least partly due to the effect of the change process. Whereas for those changes with shorter or equal length than expected, the result implicated that the effect of change content, for instance, the change type, change distance, and change experiences were stronger than the effect of the process, thus the effect of the change process related to change length was not obviously observed. There were no differences in the results of the re-estimated model of performance measurement, which used three financial variables accessed twice.

However, from the results of both the interviews and the observation records, conclusions can be drawn in the case organization. The possible reasons why there was a difference between financial records and interviews were covered. On the whole, this study considered that the time for completing the change has implications for the outcomes; the length of change process negatively affects the change consequences. The result supported Proposition 5 and previous works (Hannan et al., 2003a, Nee and Su, 1990, Burgelman, 1991, Hannan et al., 2007).

7.2.4.3   The Possibility of Ambidexterity

This study showed some agreement with the findings of previous studies (O'Reilly and Tushman, 2008) that flexibility and efficiency might be achieved simultaneously in the organisational change process, with the condition that the new change cases were based on the previous change experiences and previous domain. However, this possibility was supported by only two out the 15 change cases in the case organization. This suggests that ambidexterity is very rare and hard to achieve, as the previous studies discussed. The result showed that there were four change cases out of 15 that had the characteristic of efficiency, and five change cases with the characteristic of flexibility. The change cases with both efficiency and flexibility were the horizontal and vertical compounded respirator product expansion (change case No. 8) and the third plant expansion (change case No. 12) in the main branch. From the interview responses and company documents, it was shown that they were repeated change cases,

and their implementations were based on previous changes. For instance, company documents showed that there were five instances of plant expansion in the case organisation, the third plant expansion change case we examined was actually the fourth instance of plant expansion in the organization's history. It was also shown that the horizontal and vertical model was based on the change case of the compounded respirator product expansion change case which took placed two years previously. Thus, Proposition 6 of this study was supported with certain conditions. There was the possibility of achieving flexibility and efficiency simultaneously in the change process but only if the organisation had the previous change experiences of a certain type. Due to the limited amount of evidence, more sample cases by further quantitative approach in future studies were suggested. This study finally proposed from the results of the data analysis that the organisational change theories in adaptation and selection camps are better to be examined as complementary rather than mutually exclusive.

7.3   The Impact of the Thesis

In the recent research, some fundamental changes in the way of knowledge production are noticed, including who is involved, the process of production, type of knowledge, new settings and opportunities for knowledge production, dissemination and use (Pettigrew, 1997). Academic researchers, practitioners and consultants discover and create knowledge from different and partial perspectives, which is highly dependent on context and purpose (Van De Ven and Johnson, 2006). The distinct forms of knowledge produced by research and practice have been recognized for a long time in the literature. It is proposed that a deeper form of research is required to engage both academics and practitioners that meets the double hurdles of relevance and rigour for theory as well as practice (Pettigrew,1997). It would increase understanding of complex problems in a more penetrating and insightful way. Interdisciplinary, context-driven, mode 2 knowledge production of theme (See page 5) has been developed by some theorists, who suggest that rigour and relevance need not be separated, theory is like a walking stick to help managers work more effectively, and

the interaction between them helps in the development of better walking sticks (Tushman et al., 2007). As the author of this study is both a researcher and a manager, insightful and penetrating investigation is expected in this thesis, the dual objectives of applied use and advancing fundamental understanding are both aims of this study (Van De Ven and Johnson, 2006).

7.3.1 Academic Contribution of the Study

The author comprehensively reviewed the relevant literatures and designed a study and methodology to link research question to evidence. This thesis added new knowledge to research on organisational change, organisational change process and the elements which affect it, by looking into the effect of previous change experiences, niche expansion distances, the dynamic of change consequences on performance, and the effect of change process associated with organisational characteristics from two theoretical schools. It connected both organisational change content and process to their outcomes on performance in the research context of the safety and filtration industry in China, which has not been touched before. This doctoral study is on the edge of several academic research dimensions. They are as follows.

First, this study examined organisational change and its consequence on performance by addressing the concepts of change experience, change distance, the dynamic interaction of change and performance, and change process, which were emerged from a review of the leading ecological literature on change. Those concepts had not yet been studied together empirically. It expanded on the implications of structural inertia, directly examining the broader implication – modification routine, based on 15 organisational change events in three branches of the case organization, which has rarely been empirically tested before. In addition, in summarizing the change events in chronological order, this study showed even broader implications on the effect of early occurrences of a certain type of change in the life cycle of an organization, and the impact of elapsed time since the last change, on the likelihood of readopting a certain type of change in the future.

The destabilizing effects of changes have been assumed more than tested in previous organisational research studies, and very few previous empirical studies seek to link change action to organisational performance (Barnett and Carroll, 1995, Carroll and Hannan, 2000). This thesis tested the effect of various niche expansion distances on performance by integrating two models from both ecological and managerial perspectives. The effect of on performance was tested against three financial variables against primary assessment.

Furthermore, following the suggestion that the dynamic effect of change has been ignored in recent tests of structural inertia theory (Delacroix & Swaminathan, 1991; Haveman, 1992; Kelly & Amburgey, 1991), and the suggestion that performance as a function of the effect of change has typically not been empirically examined in past research, this study attempted to create a model of performance measurement by accessing four instances of financial performance by six-month time lags, using three financial variables, and considering the research context. It examined the instant change effect on performance, long term change effect on performance, comparing two assessments to pre-change financial performances, relating to 15 change events. Performance measurement was further assessed and adjusted against the organisational unique mean and the average speed of national economic development. It integrated a number of important variables, for instance, prior change conditions and the environmental impact. It was conducted on a variety of distinct theory fragments: expectation of firms on the survival threshold of change, regression toward the mean, time variance of change effect.

This study can be considered as ground breaking in the way that it aimed to increase the knowledge that considered both change content and change process, to distinct theirs effects, and for the way organisational characteristics were measured. Six organisational characteristics were used to measure their effect on change length and on performance. Although some of these elements had been discussed previously in existing studies in theoretical terms, the effects of some of them were newly improved

and merited further discussion, they were empirically tested for the first time, to our knowledge, in this thesis. Some of these factors had more or less the same effect as mentioned in previous studies; however, one characteristic had the effect in both directions. The conditions emerging from the results were clearly elaborated in this study.

Furthermore, most studies on organisational change are carried out in Western countries, and consequently a new insight into how organizations in other countries under specific context develop and implement organisational changes is needed. It is suggested that studies with specific research context are required (Barnett & Carroll, 1995; Bruton & Lau, 2008). This study was carried out in the context of the safety and filtration industry in China with the aims of developing the generalizability of organisational change theories in this specific context, and developing the predictability of change theories. Consequently, one of the main functions of this study comes from the fact that this study is one of the first to be carried out about the effects of change outside Western countries. Both the lack of studies outside Western countries and the lack of studies on the process of organisational change make this study path-finding.

In addition, the approach and design of this study has some value for theory development in organisational change studies. There are six challenges concluded from the previous research facing study in this area. This study met four these of requirements: (1) the inclusion of time, history, process, and action, (2) the link between change processes and organisational performance; (3) the study of receptivity, customization, sequencing, paces and episodic versus continuous change processes; (4) the partnership between scholars and practitioners (Pettigrew et al., 2001). For instance, it adopted investigation in a reciprocal way of contexts and actions in a specific industry, entailed dedication to time and history by approaching the records of historical events and historical financial data. With an awareness of culture context, possible explanations for results at odds to the propositions were explored, considering the possible impact of Chinese culture in this study.

Finally, some of propositions of this study were supported which corroborated the finding of previous studies. Some propositions were supported with conditions, and one was not supported under this research context, it waits for further evidence to verify the results. Some propositions were inter-correlated. Overall, it is reasonable to claim that the findings of this study have strong implications for future research in several important dimensions, and the research recommendations will be elaborated in this chapter later. The findings of this study also have strong implications for the potential to use basic organisational theories to make predictions on change events in the real world, and this will be discussed next.

7.3.2   Implications for Managerial Practice

Engaging both academics and practitioners for better interpreting and implementing offers potential understanding of complex problems in a more penetrating and insightful way (Van De Ven and Johnson, 2006). In this thesis, collaboration with various practitioners internal and external to the case organisation for more than one instance, extended the scope of the scientific base in this study and enhanced its leverage in the ever-changing world of practice (Pettigrew et al., 2001). This study was not only driven by a quest for fundamental understanding but also for consideration of use.

It sheds light on several important real world issues. The results of this study supply the possibility and framework that can approximately predict the outcome of organisational change under varying conditions. For instance, it implies what type of change would be likely to be achieved with less cost, to what extent managers might be likely to successfully expand their product scope, what firm would find it relatively difficult to achieve positive change consequences, and it suggests a possible way of evaluating the consequences of change on performance.

This study aims to answer how and why organisational changes lead to different

change consequences on performance. Apart from the implications mentioned above, it examines when and how organizations are more likely to benefit from changes under different environmental conditions. For example, it suggests that if the environment undergoes sudden transformation, and if the new change is based on the previous domain or previous change experience, the change effect is more likely to be beneficial. It also supplies some direct practical suggestion. For instance, the organisation could separate aligned organisational architectures i.e. business model, incentives and culture for exploring and exploiting subunits, and then target integration in a value-enhancing way. It would be helpful to decrease the disruptive effect of the change process and achieve a better result in organisational change.

This study was also conceptually and instrumentally relevant to the case organizations (Nicolai and Seidl, 2007). Excepting the above implications, it is helpful to managers in their strategic decision-making by giving them a framework for logical analysing all typical historical change events in the case organization, so that the proper distance and speed of a certain type of change with relatively beneficial outcomes can be noted by top managers, and types of change resulting in harmful effects can be prevented. It raises the awareness of the effect of the change process to managers, assists them to find the potential problem and focus on problem solving. For example, opacity was shown in most of the historical change cases, and this reminds the managers to be aware to collect sufficient external and internal information before the change, to reference the previous change experiences and to control the change distances within a reasonable scope. Moreover, as the cultural position might not be easily recognizable, if the resolution effects encounter moral resistance, it reminds managers to focus on cultural matters. Eventually, it may help managers formulate proper change design, and optimize organisational performance for the case organization.

In addition, the above implications have been communicated back to the managers in the case organization. Since private organizations rarely fund research projects on change management, especially Chinese enterprises in an emerging market, they all welcomed this chance and it led to a massive discussion reflecting upon the routine and

the operation of their change management in the company. They agreed with some of the practical suggestions which provided direct guidance about change management. For instance, they recorded that they will open a new department as an independent unit to manage change projects when a new project is launched in the future. This will avoid the disruption to the previous operations and organisational structure, and decrease the immediate negative effect. Another example, the plan for one new project was shifted a bit. They are organizing the project regarding the half mask with power supported assembled in chemical coverall. According to the results of this study, they agreed that the speed and distance of change projects are crucial - how much change is related to the previous domain could decide the consequence of change. Thus they decided to explore half masks without power supported and chemical coverall separately. If both successfully pass the sealing and filtration efficiency standard tests, they will target to do the combination at that time.

With regard to the general change management implications, the managers from three branches systematically reviewed the data of change events covered in this study as well as the historical records of all major change events from the time of founding to the current time. The managers were in groups to make the presentations of SWOT analysis. From this reflection process, many valuable points were recorded, especially the managers raised the awareness about the effect of change process on change outcomes. Several points were presented here. For instance, they agreed that they did not pay much attention about the moral reaction of employees and cooperation issues in the change process. It did exist in the processes of many change events. From now on, they will prepare enough technical training for new project and motivation meetings before any new change is initiated. Another example, they agreed that it did happen that in some change events, if they had some previous similar change experience, they preferred to make it same way, took it for granted and did not scan the environmental information sufficiently, it might lead to filter or ignore some internal and external information, therefore resulted in increasing some costs in the change process and miss opportunities. Lastly, they agreed that the results in this study and the reflection process have important practical implications and gave them a good

opportunity to improve their daily change management. They agreed to organize this kind of meeting to discuss and reflect the change management on a regular basis at least twice a year. The author of this study was happy that the managers think the results are helpful and can learn something from them. She agreed to continue to supply any assistance to the new change projects whenever they need.

Moreover, as we mentioned before, the safety and filtration industry emerged from the hardware industry, healthcare and pharmaceutical industry[87] in China, which do not have clear industry boundaries. As Martin Ruef (2000) commented, the healthcare industry arose in the existing population in relatively uncrowded regions. It has a very short history and a limited number of enterprises in China. The macro level data as background information of this industry is unlikely to be found directly in China. Every possible source of data i.e. the information from founders of enterprises, national exhibitions and professional journals and the UN website, has been sought. This study briefly summarizes the history and characteristics of the safety and filtration industry in China as the background of this study. It supplies the interpretation and the criterion to the phenomenon of organisational changes. Doing so, this study presents a picture of organisational changes in this industry. As a starting point, it might benefit future researchers and managers who have interests in this industry.

7.4   Limitations of the Study and Recommendations for Further Research

By checking the ground rules for good research (Denscombe, 2002), this DBA study clearly stated the purpose, reviewed theoretical discussion systematically, and tried to investigate the empirical data resources in a credible manner to promise data validity within a time limitation. It can be claimed that it reached a certain level of purposiveness, testability and objectivity. Consequently it is significant and it has theoretical, practical and personal meaning.

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[87] This is according to the content division of National Canton Fair in China which has over 100 years history.

However, there is no such thing as perfect, and there are numerous limitations in this study. Some of them are related to the methodological approach. Apart from the limitation discussed previously in the methodology chapter, this section will exam other limitations of this study in order to help future researchers to reduce the subjectivity and increase the validity for their findings. This thesis adopted a qualitative approach, with qualitative data collection methods. Such methods were interviews, observations and documentation. Direct interaction was allowed by using the interviews and observations. Although it is well known that every methodological technique has its own strengths and weaknesses, it was difficult to judge whether the informants were responding openly or not. The researcher tried to overcome this limitation by accessing the important interviewees several times, chatting with them during the observation period in order to create a familiar and relaxed environment for formal interviews. In addition, the author kept in touch with the key informants in the case company, helping to dig for further information and cover any information gaps detected during the later analyzing stage. A limited number of documents could be copied, and free access to company documents would add more validity to verify the results of this study. Thus, this limitation was overcome by using a triangulation of methods and sources while collecting the data. The limitation associated with the observation is possible observer bias (Saunders et al., 2007), which means that the subjects might adopt certain behaviours while aware of being observed, which are different from what they normally do in their daily work in the case organization. This was not the case in this thesis: before the author conducted this study, she worked in this organisation for several years, most of the informants knew her and did not feel any artificiality when she was present. Besides, the author was introduced to the employees in a formal company meeting. Both the purpose and the nature of this research were explained, the data collected in this study were promised to be used for research only without any influence on the person and current change cases involved. Moreover, following the previous researchers' suggestion, adopting historical change events and time continuous analysis techniques is helpful to improve situations such as this study. Based on the above reasons, the subjects' behaviours do not have any direct

negative influence on the finding of this study.

Furthermore, the thesis is a requirement for finishing a DBA degree. This study was conducted in China and the author is a DBA full time student in the UK. Consequently, time and resource limitations constrain the effects of this study. Certainly more informants and more organizations could be helpful to increase the validity and robustness of the findings in this study. However, as we mentioned earlier, it was unlikely that consents from other organisation for a comparative case study would be achieved so its generalizability is limited. The finding is valid within this specific scenario, however it has strong implications to be generalizable to the organizations in the safety and filtration industry worldwide which were founded at a similar time to the case organization, (Sekaran, 2003). The reasons are summarized here as below: as we mentioned, safety and filtration industry requires a higher entry level to the organizations, the organizations need certificates to enter the markets, every continent has different standard and regulations, those regulations include the standard of products' specifications, operation control of production line, quality control management etc. Thus the organizations which are available in the markets are pretty much follows same standard to each market, their technology, operation and management are more open to the international stage, less influenced by national culture and economic conditions. Chinese economic development context and national culture might play a role in explaining part of the results in this study. However, this study does not have direct evidence from data analysis result or any emerging information on the impact of Chinese culture on the change events. Considering the conflict arguments about the effect of Chinese culture on the organisational change in the previous studies and the result from the primary data in the preliminary stage, this study considered that Chinese background was less important than the other variables which this study focused. Further research is suggested to make direct evidence to the possible effect of the national culture in organisational change studies.

In addition, although this study supplies valuable insights into organisational change in the safety and filtration industry, it is preferable that future research covers more

organizations in this industry in China in order to obtain more robust results. Concerning the specific nature of this industry in China, what matters in one data set may not in another (Greve, 1999). More research conducted in other industries to investigate organisational change could be utilized for comparison with the results in this thesis.

Moreover, performance measurement studies seem to attract more criticism, as we mentioned earlier. This study has tried to overcome this in several ways. It attempts to reflect the distinction between the effect of change process and change content on performance, to show the immediate and long term dynamic change effect, and the time path of interaction of change and performance. However, regarding the part of pre-change performance in predicting the probability of change in this study, the previous studies suggested that performance measurement from only internal of organisation may have less power to predict the probability of change. The industry performance as external context to organisation could reduce the vulnerable of self-enhancing uses of internal accounting (Greve, 1998). But this has the limitation that the effect of industry performance feedback may be moderated by internal politics. It was also suggested that social and historical aspirations have higher predictive power on change initiation compared to pre-change performance (Greve,1998). Because it is unlikely to identify the aspiration by empirical study, and it is beyond the capability of the researcher of this study as a single DBA student, which leads to a limitation on the generalizability of the results in this study. It is expected that future researchers consider the effect of an individual decision maker on group decisions, and the learning models from the leadership perspective when investigating the probability of change in future organisational change studies.

Finally, this study of organisational changes in the safety and filtration industry in China is the starting paper and it is in the very earliest stage in the development of organisational change research in China. While other modelling approaches are possible, this thesis has at least demonstrated one approach properly under this

research context so it can be claimed to have achieved analytic generalization instead of statistics generalization. The finding of this research, agreeing with the suggestion in the work of Singh, House & Tucker (1986) and Haveman (1992), is that the question of whether organisational change is hazardous should be replaced by questions about which conditions or to what extent organisational change may be hazardous.

Appendix I: Change Case Events Description Outline

Change Case One – Disposable nuisance dust mask product expansion change event:

The disposable nuisance dust mask was launched in about September 1994. Based on some inquiries for nuisance dust mask by a few customers in the United States, and also in order to further utilize the non-woven filter material produced by themselves, Yang (the owner) decided to enter the dust masks market. The disposable nuisance dust mask uses polyester synthetic fibre filter media and aims to supply primary efficiency breathing filtration for heavy industries. The workshop and production facilities were established in 1994 at the current location of the main branch, the workshop was rented and the facilities were self-invented. The production of nuisance dust masks was very labour dependant, at first there was only one production line with about 50 workers. Nuisance dust masks were only produced for export as they were still not accepted in the native market of China; the only type of nuisance mask available were surgical face masks at that time in China.

Change Case Two – Breast pad product deletion change event:

The breast pad product was introduced by a customer in the United States who promised to have orders if HDHY could produce the item. It used non-woven polypropylene and polyester synthetic fibre materials to provide liquid absorption for inside of bra for breast feeding mothers. It was launched in 1995 and a decision was made to cease production in 1997. There was no native market for this product in China at that time, and it was not widely used in Western countries. Thus the order quantities were very little; there were no spare profits for maintaining the product line and paying for labour costs from such a small production quantity.

Change Case Three – Incohesion material product expansion change event:

The case company started to produce non-woven filter materials from 1989. Previously, only one kind of filter materials can be produced with glue by the chemical bond method, and it only can be produced with a limited length range. It limited how and where the filtration material could be used. They purchased a new machine for incohension production, which uses physical conglutinate to low melting point fibre. At that time, incohesion material was only available by import. Simultaneously, the technical persons in the case organisation did various experiments and tried to readjust the production machines, finally they successfully manufactured incohension filter material without any length restrictions. Any length requirement can be achieved, as far as they knew; they were the first manufacturer to have the capacity to produce filter material of infinite length at that time. It definitely extended the usage range of filtration material and saved costs in many instances. However, most customers were unaware of benefits of this product at first, and it was not accepted by the market for a long time. But, when the customers noticed the advantages, it rapidly took over the market niche of the previous product in many areas. By far, it has become one of their main products and contributes one third of total turnover to the main branch in case organization.

Change Case Four – Battery separator product deletion change event:

The battery separator was required to be produced by one state owned automobile producer. It was effective, disposable and recyclable with the advantage of being green by using non-woven materials for automobile battery separators. The production facilities were not advanced and it had high cost, however there was a reasonable profit margin. The problem was that the state owned enterprise often did not pay regularly. It depended on their sales performance. Their payment in arrears made the case organisation suffer bad capital flow, and it influenced the normal production of other products. Also because this products facility was not high technology and had no obvious market potential the case organisation decided to stop battery separator

production in 1999, just a few years after it was launched. However, it could not be stopped suddenly; the production line was partly operational for one year for labour arrangement and market requirement reasons.

Change Case Five – Compounded respirator product expansion change event:

The compounded respirator was developed according to the information from customer requirements and some international professional exhibitions, i.e. A+A safety fair, Dusseldorf, Germany; NSC Congress and Expo, USA; Safety and Health Expo NEC, Birmingham, UK. There were various product standards to be met over several continents before entering the market. For example, it was required to pass a comprehensive product test and company audit by the BSI (British Standards Institute) laboratory in the UK or by other two laboratories in European countries to achieve a CE standard certificate before any market activity was allowed in the European market. The US government requires the respirator to pass NIOSH 42CFR84 and their company audit procedures; and the Australian market demands AS/NZS 1716: 2003 certificate authorized by SAI Global, Australia. The other countries do not require these standards. Furthermore, each of those continents have different requirements, it did not necessarily mean that you would pass the US test and audit if you have achieved the CE standard certificate; and there are various test standard levels for the certificate, it is not comparable among various levels of different certificates. Every model of compounded respirator needs a certificate for itself; even tiny changes in design require another certificate and another test. It was a very hard process to achieve those standards, very expensive and time consuming.

The compounded respirator was started to be produced in 2001, some accessories and raw materials used for respirators were imported from the USA and UK. The products lines were self invented as there were no direct production facilities that could be purchased in China. The test machines were all imported from the US. The first CE standard certificate was achieved one year after it was launched. Now the case organisation has the whole set of certificates for the majority of their compounded

models covering various levels. The compounded respirator was exported to the markets covering North and South America, Europe, South-East Asia, Australia. It contributes 40% of annual turnover of HDHY.

Change Case Six – Plant expansion one change event (main branch):

The land at the location of the main branch of the case organisation was purchased in 2001. The office building and workshop buildings were finished, and the case organisation occupied it in 2002; they then started to invest in more production lines, more testing facilities, and expanded from about 300 workers to around1,000 workers. The product workshops were readjusted, the production lines were reassembled, the workers were rearranged and company regulations were updated.

Change Case Seven – Plant expansion two change event (SJZ branch):

The SJZ office of the case organisation was responsible for export and import for the case organization. Some of their orders were through the name of a state-owned company with rights to export and import directly. The case organisation needed to pay agency fees to them each year. In 2003, the SJZ office of the case organisation expanded their business range in their license, totally separate from this state-owned company, and purchased the commercial building and established SJZ branch. The office staff was expanded from two to around 15 persons, and their export turnover was increased from around US$600,000 per year to US$20 million in 2009.

Change Case Eight – Horizontal and vertical compounded respirator product expansion change event:

The horizontal and vertical model of the compounded respirator was developed in 2003, based on the cup model compounded in 2001, considering the trend of this product development in the international market. This model was easy to put into a pocket and more convenient to carry without influencing its filtration efficiency and

wearing comfort. The certificate was achieved quickly compared to previous ones. As the compounded models were launched earlier than other competitors, and the international certificates had been achieved, the case organisation was selected as one of two manufactures to supply compounded respirators to central government to prevent a SARS further explosion in 2003 in China. They also passed the quality test and achieved the French government bid order against bird flu in 2005, over 300 containers of the horizontal and vertical model of compounded respirators were exported to France for the protection of every single citizen. During the product development process, they also achieved several patents and Chinese honour certificate, such as the patent of anti-bacterial nanotechnology compounded respirator.

Change Case Nine – Disposable coverall product expansion change case (SJZ branch):

In order to organize 'safety kits' to satisfy some customers requirement and to supply more holistic protective products and better services, SJZ branch started to deal with a disposable coverall in 2004. It was aimed to promote respirator orders. The quantity requirement for the coverall was small, thus the case organisation did not invest in a sewing workshop, SJZ branch ordered outsourcing for the disposable coveralls at first. However, it was hard to purchase the finished product directly from other manufacturers, as the order quantity was not sufficient to reach normal minimum quantity for fabric producing and other production arrangements. The cooperating factory required SJZ branch to purchase the fabric and all the accessories. Because the production was dealt by other manufacturers, and also because the quantity was not big, the processing cost was higher than normal. The profits from the respirators orders had to compensate partly for the order of coveralls. CE type 5/6 certificate for disposable coverall was applied for and achieved by the case organisation itself a few years later. Before that time, they were only able to export to the limited customers who had the certificate under their company names, and they needed to send customer samples to be tested by them for each container. The coveralls under that level do not need certificates.

Change Case Ten – Filter bag product expansion change event:

The filter bag was developed according to an enquiry by a big multinational filter manufacture in Sweden in 2004. The production line was imported from Taiwan in the same year. It was the first filter bag production line in native China at that time. The filter bag was compounded by various technical polypropylenes. Not only does the material have a three dimensional net structure, it also forms rough fine filter layers and intensive layers and embodies integral advantages. The case organisation had tried to produce composite filter material before this production machine was imported, thus they were familiar with the process of the composite, but the new facilities supplied a new method of sewing with much reduced costs. It was accepted by the customers very quickly. Another three sets of production lines were imported in the following year. However, because this new production line was semi-automatic with higher technology, very few workers were needed, all the workers wanted to transfer to this new line, as they were paid according to production quantity. There were some problems for the workers' rearrangement.

Change Case Eleven – T/C, cotton work uniform product expansion change event (FZ factory):

In 2005, following a buy in of new staff with previous export experience for T/C cotton work uniform, sewing workshop and facilities were invested in, also it was hard to arrange processing in another cooperating factory for the disposable coverall which had already had some stable customers. T/C cotton work uniform had better profits if it was handled well than other disposable products. Some of the fabrics needed EN471, EN470 and EN531 certificates. The customers in this line are totally different to the customers for disposable coveralls, although they were both processed by sewing production facilities, the technology required on T/C cotton fabric and the order arrangements were much harder to be dealt with. There were 100 to 150 workers when the sewing factory was founded and they have kept the same scale to date. Although

the sewing factory is on the same site as the main branch, it has been kept financially and operationally separated.

Change Case Twelve – Plant expansion three (main branch) change event:

Several years later after the headquarters of the case organisation moved to the current site, more land next to it was acquired and more workshops were established in 2006. The main branch was expanded to double its original size. The land acquisition this time was partly because of the beneficial rate and policy supplied from local government to the case organization, probably as the case organisation had become one of the biggest tax contributors to local government, or as they had already had some land as capital to secure the loans. In this plant expansion process, more mature production lines were invested in, the production capacities were doubled, the working environment was definitely improved and the quality of products could be controlled better. For instance, a big investment for hermetically sterilized workshops for one kind of respirator was launched during this plant expansion. The workers had been expanded from 1,000 to 1,800 this time.

Change Case Thirteen – Top leader succession in sewing factory (FZ factory) change event:

The top leaders in the sewing factory were all invited from state owned clothing organizations. Some of them were very experienced. However the operational routines and the organisational culture were quite different in the joint venture (case organization) compared with those in state-owned organizations. The conflict was becoming more obvious in 2006; one year after the sewing factory was established. A top administration manager abdicated and one technical director was forced to resign in the same year. Another two managers bought in but did not last long. At the time of writing, the technical office has no director, and the administration manager was allocated to a local manager who had no clothing production administration experiences.

Change Case Fourteen – Plant expansion four (SZ branch) change event:

There were many customers of the case organisation in the south of China, the main production branch was in the north. Because the filter material is short in volume weight, the freight costs became more obvious in quotations to the southern customers. In order to solve this problem for customers and to supply the goods in a timelier manner, SZ branch was established in 2007. The factory buildings in SZ were rented, the new production lines were invested. Half of the workers in SZ were transferred from main branch from north to south of China, the other half were hired locally, in order to keep stable product quality and to shorten the run-in period of the new factory. However, the effect of this transformation was not desirable.

Change Case Fifteen – Top leader succession (SZ branch) change event:

The top leaders in SZ branch were hired from a nationwide recruitment process. Two local managers and one from main branch were chosen. There were some management inconsistencies among them, plus some existing problems between the new hired local workers and old transferred workers. It made the management even harder to control. The case organisation decided to find a new technical director instead of one of two local managers in 2008. Several new managers were tried for probation during the succession process. The new manager was offered very good pay and packages. There were still some problems at the end of the observation period and probably both the new leader and workers need more time for adjustment.

Appendix II: Copy of Letter to Case Organizations

Our ref:

To Whom It May Concern

MRS HUIJUAN WANG

The above student is a registered full time DBA research student at Durham University who is researching 'organisational change and performance: effect of inertia, extent of niche expansion and organisational characteristics' under our supervision. Mrs Wang is a hard working, serious and committed researcher who is expected to carry out a research to contribute knowledge and business practices which is required by DBA degree.

We discussed the previous organisational researches in this area and agreed that it would be beneficial to her work if she could introduce in-depth case study analysis, also would potentially have practical implication on your decision making, change process, and benefit your organization.

Mrs Huijuan identifies that your organisation is ideal to be adopted as a sample company, I would appreciate it if you could allow her to access your company and the relevant persons, we will ensure that it will be fulfilled with a highly ethical standard, all data is used purely for research purposes and with a promise of confidentiality. She would like to interview the person who is involved in the organisational change decisions and change processes, as well as the person who is affected by changes. Please kindly provide such kinds of access, with thanks.

Many thanks for your cooperation to Mrs Huijuan Wang's research.

Best regards,

Yours Sincerely

Professor Laszlo Polos
Supervisor & Expert of
Organisational ecology
Durham Business School

Appendix III: Semi-structured Interview Assisted Questions (English version):

1. Please list the milestone events of your organisation as you know them.

2. Please give an description about one change case you were familiar with or experienced.

3. How was its performance? What were the obvious characteristics you could see in the change process? What were their effects?

    (The above relates to a specific change event, for all propositions)

4. Who was involved in making the change decision? Who authorized the change decision?

5. Were there any conditions placed upon the change decision? For instance, company financial performance or external environment conditions. (Proposition 1,4)

6. What degree of consensus was there within top managers' team about the change decision which was made? Were you affected by other group members? (To manager informants)

7. What degree of consensus was there between all the involved departments about the change decision as you know them? (Proposition 5)

8. Was your change decision or change process ever influenced by other issues, i.e., political influence or any interpersonal relations impact? If yes, please give an example. (Proposition 1,5,6)

9. Do you prefer to use a certain type of change? Did you use it before? Would you like to adopt it again in the future if possible? (To top and middle manager informants)

10. Do you have a model for organizing a change? For instance, reference to your previous experiences or reference to the model of your competitors. How long was your recent leadership regime in your company? (To top and middle manager informants)

    (The above relates to a specific change event and general organisational information, mainly

11. Which products of your organisation do you think were related with the original products or technology when they were newly improved? Were their target customers the same/similar with previous ones?

12. Do you think it matters whether the new product is related or unrelated to previous products? Why? For instance, were there obvious different performance consequences? In what aspects, do you think this new product is related to a previous product?

13. Did any new product expansion or new technology application bring a negative effect, in which aspect? Was there any influence on the existing products?

14. Did the new product or new technology application bring a positive effect and in which aspects?

    (The above relates to a specific change event, for Proposition 2)

15. Was there any other change event in your company that you know was obviously harmful to financial performance (i.e. market sales)? Was it related with organisational mission, authority structure, technology and marketing strategy?

16. Do you think there were any other reasons, this harmful effect was produced? For instance, an unforeseen problem or cooperation issue in the change process. (Proposition 3,4,5,6)

17. Was there any other change you experienced in your company that benefitted the financial performance(i.e. market sales)?

18. Did it influence the previous operational routine? Was this change related with part of the organisation or the whole company? Please describe to what extent this change case was implemented? And under what external conditions? (Proposition 3,4,5,6)

19. Did it reflect on financial performance straight away or sometime later?

20. Do you remember if some change events occurred because the company financial performance was very good at that time? I mean better than normal. Was the performance getting better or worse after change event? Was that obvious effect temporarily or not?

21. Do you remember if some change events occurred because the company

performance was poor at that time? Was the performance getting better or worse after the change event? How long did the effect last?

22. Please give a general evaluation to the change case you remembered about the performance within six months and their performance in about one year.

23. Do you notice in what periods or usually for what reasons your organisation is more likely to generate changes?

    (The above relates to both a specific change event and general organisational information, mainly for Proposition 3 and 4)

24. Was there a detailed implementation plan for completing the change in advance, including time schedule and deadline? How long did it actually take?

25. What was the extent to which the job description of your group and the overall goals of change had been distributed, how far was it understood? And after how long did you react to it?

26. How well do you think you know the strategy of your organization? What is the current method of internal communication?

27. Did you summarize in advance what barriers might disturb you before the change started? Did you have a detailed plan to resolve?

28. During the change process, was there any barrier which was unexpected? Please give an example.

29. Do you think the resources i.e., financial, administrative, staffing, time, technology etc.) for that change event were available?

30. Where did you seek additional resources if the need arose during the change process?

31. What was the extent to which your group could approach the top management team if some modification needed to be suggested during the change process? (To middle manager informants and general staff informants)

32. During the change process, how did the staff in relevant department react and adapt?

33. Was there any influence on the change implementation in the change process by organisational structure? For example, what was the format of your change project management? Did your company specially select persons from different relative

departments to make a temporary change project team or keep to the previous management? What level of power can this change project team have?

34. Can you give attention to daily management during the change process as well as previously? How did you try to balance?

35. Did you have to give up some marketing plan (for example, give up a business visit or exhibition) for the change project?

36. What aspect of the change process was modified, and for what reason?

37. Was there any other change decision being made during the implementation of this change? Was it made initiatively or passively? For instance, was there any top manger left in the firm or was a new top manager appointed during the spell?

38. Do you think the additional change decision was helpful or not eventually to reach the original change aims? Please give an example in which aspects it was helpful or harmful.

39. If comparing with the process of change events endured in the main branch and other branches, which changes needed more time and were more complicated? Why? Can you give me an example.

40. To what extent did you adapt to 'company's generic behaviour' when you joined this company? For about how long?

41. Please assess the cultural strength of your own company as well as five other familiar firms in the same industry, and make a list from strongest to weakest.
 Indicators for strong culture: a.) the company has been managed according to long term standing policies and practices; b.) the company makes its value known through a creed and makes a serious attempt to urge the managers to follow; c.) managers speak or do things in common with their company' s style.

42. Was there any performance measurement during the change process?

43. Do you think there was some relationship between change length and change effect? Is longer or shorter better for change effect on performance?

44. Do you think the change processes usually takes longer or shorter than expected?

45. Do you think the unforeseen issues which happened in the change process were more than those in other management decisions' implementation or not?

46. How did you judge whether a change had been finished or not? How did you

assess the success or failure of the change?

(The above relates to a specific change event, cross case references and general organisational information, mainly for Propositions 5 and 6)

Remarks: The leading interview questions were not asked in a particular order to some informants, they were for all interview informants except where indicated.

Appendix IV: Semi-Structure Interview Assisted Questions (Chinese Version):

1. 请列举你清楚的公司改革发展大事记。

2. 请回想并详细叙述一个您经历的，记忆清晰的公司改革事件。比如说：请说明大概起始时间，主要变化，正负面影响（对以前产品的，相关部门的，人员，车间，设备，机构调整等各方面），连带到非相关部门的影响，对公司营业状况的影响。

3. 这个改革的发展状况和结果怎样？发展过程中主要特点是什么？具体有什么表现？

   （以上问题针对某一特定改革事件，针对测试所有 PROPOSITIONS）

4. 这个改革的决定都是由谁做出的？有谁授权开始执行？

5. 这个决定是基于什么情况下做出的吗？比如说外部环境影响或者公司内部财务状况？(Proposition 1,4)

6. 当时做决定的管理层内对这个决定同意的一致度有多少？作为一个管理人员你多大程度上受到其他管理人员的影响？(只针对领导层受访对象)

7. 当时各部门对这个决定的认可度有多少？（Proposition 5）

8. 当时有没有任何其他状况影响到这个改革的决定和执行过程？比如说政策影响和人际关系影响，如有，请举例。（Proposition 1,5,6）

9. 作为一个领导者，你没有倾向于采用哪种改革方式？过去在这个公司执行过吗？如有可能，你会再次使用吗？（只针对中高层受访者）

10. 你们是否有管理改革的一个固定模式？比如说，是根据以往的经验，还是参考你们竞争公司的模式或其它？公司目前的领导层就位多长时间了？（只针对中高层受访者）

    （以上问题针对某一特定案例和一般公司信息，主要针对测试 Proposition 1）

11. 公司产品扩展改革事件中有没有新产品和原有产品系列上，技术上有联系的？他们的目标客户群一样吗？

12. 你认为新产品和老产品有没有联系重要吗？为什么？比如说，有没有较明显的不同的发展状况和结果？

13. 你记得有新产品的拓展产生什么负面影响的吗？在哪方面？有对原有产品有什么影响吗？

14. 你记得有新产品的拓展产生什么有利方面的影响吗？

（以上问题针对某一特定案例，主要针对测试 Proposition 2）

15. 公司有其他改革事件是对公司财务状况有明显不利影响的吗（比如市场销售，产值）？是否这个事件联系到公司的口号/宗旨，管理框架，核心技术或者市场战略方面有关？

16. 你认为改革的负面影响是有什么原因造成的？比如说，公司的一贯办事方式？改革中不可预见因素？相关各部门的合作？还是办事拖沓？举个例子。（针对 Proposition 5,6）

17. 公司有否其他改革事件是对公司财务状况有有利影响的（比如市场销售）？

18. 你认为这次改革有否影响到公司原有模式，对公司的整体还是部分有影响？请描述这次事件发生的程度和在何种外部环境下发生的。

19. 它是立刻反映到财务状况上还是停一段时间以后？

20. 你记得是否公司有改革事件，发生在企业效益比一般情况较好时，改革后企业效益是像更好转变还是变差？企业效益是立即发生改变，还是一段时间后？这个反应是暂时的还是时间相对较长？

21. 你记得是否公司有改革事件，发生在企业效益比一般情况相对差的时候，公司不得不作出的决定。改革后企业效益是向好转变还是更差？企业效益是立即发生改变，还是一段时间后？这个反应是暂时的还是时间相对较长？

22. 针对一个你清楚记得的改革事件，请评价它半年左右的发展状况和一年左右的发展状况。

23. 你有没有注意到公司是否在某种特定状况下，或某种时期，某种前提下更容易进行改革。

（以上问题针对某一特定案例和公司一般信息，主要针对测试 Proposition 3,4）

24. 公司改革决策前有没有细致的执行计划，包括时间规划和期限？实际上这个改革是多长时间完成的？

25. 有没有对你们组的任务的具体描述/指示？你的部门或者你们组对这个事件整个的理解有多少？你们部门从接到公司决定后，多长时间真正开始操作？

26. 你认为你对公司的战略了解多少？公司现在的内部沟通方式是什么？

27. 执行之前有没有想到改革中可能发生的什么阻碍？你有没有想什么对策去解

决它？

28. 在改革的过程中，有什么没有预料到的阻碍发生吗？请举个例子。

29. 你认为改革过程中需要的资源，（例如资金上，管理支持上，人员配备，时间，技术等等）或者必备的条件是否存在/充足？

30. 改革过程中，如果你需要更多的支持（例如资金上，管理支持上，人员配备，时间，技术等等，比如你觉得人手不够或者时间太短完不成），你会向谁提出要求或者寻求帮助？如何申请？（针对中层领导和一般员工）

31. 如果改革过程中，原计划需要调整，你多大程度上能和决策层直接沟通？（针对中层领导和一般员工）

32. 改革过程中，各部门，车间人员是否适应（比如新设备，新产品，新人员，新车间，新制度等）。

33. 组织结构对改革的过程有影响吗？比如说,你们的改革的管理团队是什么样的？是从各部门挑人组成个特别团队，还是都保持原来的位置，只是在原来职务的基础上增加新的改革任务？如果是组成特别的团队,这个改革团队的权限由多大？

34. 如果是保持原来的职位，你在改革的过程中是否可以像以前一样对原来的工作保持同样的关注？如何平衡对改革的进程和日常管理工作上的时间分配？

35. 你是否在某项改革计划中不得不放弃一些原有计划？ 比如市场推广，由于时间上的冲突不得不放弃一些客户的拜访？

36. 改革过程中的哪一方面被修改过，为了什么原因？

37. 在改革计划执行中,有没有决定任何新的组织变化？这些新的改变是由于不得不应对新的情况还是主动做出的决定？比如说，在改革过程中，做一些领导岗位的人员调动。

38. 你认为这些增加的改革计划对于达到原来的改革目标是否最终有帮助？请举个例子（有帮助或阻碍）。

39. 比较在总部的改革事件和在其他其他分部的,你认为哪个比较难执行？为什么？请举例说明。

40. 你在加入公司后多长时间,多大程度上融入公司的一般的或典型的办事方式？

41. 请评价公司的企业文化力度，和 5 家在同行业的你比较熟悉的企业相比，从最强到最弱，如何排名？企业文化力度评价可以参考一下参数：

a.) 公司管理保持长期不变的政策和操作方式；

b.) 公司有强烈的宗旨或信条，大部分的员工不得不更从或信服；

c.) 公司经理办事方式大致一致。

42. 在改革事件执行过程中一般有衡量的标准吗？

43. 你认为改革的结果，除了改革的内容是否正确，是否和改革过程的长短有关。

44. 你认为改革过程通常比预期长，差不多，还是会比计划短？

45. 你是否认为突发状况在改革过程中会比在一般公司管理事务中多？

46. 你怎么评判改革成功或是完成？

（以上问题针对某一特定案例，案例比较和公司一般信息，主要针对测试 Proposition 5,6）

备注：以上半开放式采访的引导问题对一些受访者不是全部按照顺序提问，一些问题只针对于部分受访者。

Appendix V: Primary Data Collection Schedule

Date	Activity
01/02/09-01/04/09	Design of Semi-structured interviews; Briefing of research assistant question format for interview
10/03/09-30/03/09	Contact with interviewees, get the permission letter and make the appointment;
01/04/09-05/04/09	Per-interview five managers, revise the guideline of interview format, skills and techniques; Prepare for tape-record and note-taking;
05/04/09-10/09/09	Interviews; Documentation collection; Participation observation
05/04/09-30/09/09	Writing and coding from interviews transcripts; Summarize and coding from the note-taking and tap-recording;
10/09/09-30/03/10	Recontact and re-interview to key informants
10/09/09-30/03/10	Organize the finding matrix Data analysis
01/04/10-30/11/10	Writing up and revise

Appendix VI : The interviewees' Agreement Letter

The Interviewees' Agreement Letter

Hereby we agree to accept the interviews by Ms. Wang Huijuan for her doctoral research, and authorize her that can tape record all the processes of interviews, and make notes of responding only for the research purpose.

在此我声明同意接受王慧娟的采访，　并授权她可以对采访过程进行录音，对访问进行记录，但此采访仅可用于王慧娟的博士研究报告，特此声明！

10th Mar, 2009

Signature by:

Informants Signatures

Appendix VII: List of Informants, Branch, Job Position and Change Events Discuss

Number	Branch	Informant's positiion	Change decision maker / Executor	Change events discussed
Informant 1	Main branch	Chairman General Manager (Three interviews)	Decision maker	1.Disposable nuisance dust mask product expansion change case 2.Breast pad product deletion change case 4.Battery sparator product deletion change case 6.Plant expansion one(main branch) 10. Filter bag product expansion change case 11.T/C,cotton work uniform product expansion change case (FZ factory) 12. Plant expansion three (main branch) 14. Plant expansion four (SZ branch) 15. Top leader succession (SZ branch)
Informant 2	SJZ branch	Director (Responsible for international trade and R&D) (Two interviews)	Decision maker	5. Compounded respirator product expansion change case 6. Plant expansion one (main branch) 7. Plant expansion two (SJZ branch) 8 Horizontal and vertical compounded respirator product expansion change case 9. Disposable coverall product expansion change case (SJZ branch) 10. Filter bag product expansion change case 11.T/C cotton work uniform product expansion change case (FZ factory) 12. Plant expansion three (main branch) 13. Top leader succession (FZ factory)
Informant 3	Main branch	Financial Director	Decision maker Executor	1.Disposable nuisance dust mask product expansion change case 6.Plant expansion one(main branch) 10. Filter bag product expansion change case 11.T/C,cotton work uniform product expansion change case (FZ factory) 12. Plant expansion three (main branch)
Informant	Main	Purchasing	Decision	8 Horizontal and vertical compounded

4	branch	Director	maker Executor	respirator product expansion change case 9. Disposable coverall product expansion change case (SJZ branch) 10. Filter bag product expansion change case 11.T/C cotton work uniform product expansion change case (FZ factory) 14. Plant expansion four (SZ branch)
Informant 5	Main branch	Respirator Production Director (Two interviews)	Decision maker Executor	1.Disposable nuisance dust mask product expansion change case 5. Compounded respirator product expansion change case 6. Plant expansion one (main branch) 8 Horizontal and vertical compounded respirator product expansion change case
Informant 6	FZ factory Main branch	Work Uniform Production Director	Decision maker Executor	11.T/C,cotton work uniform product expansion change case (FZ factory) 12. Plant expansion three (main branch) 13. Top leader succession (FZ factory)
Informant 7	Main branch	Filter Material Production Director	Decision maker Executor	3. Incohension material product expansion change case 12. Plant expansion three (main branch)
Informant 8	Main branch	Lab Director (Two interviews)	Decision maker Executor	1.Disposable nuisance dust mask product expansion change case 3. Incohension material product expansion change case 4.Battery sparator product deletion change case 5. Compounded respirator product expansion change case 6. Plant expansion one(main branch) 8 Horizontal and vertical compounded respirator product expansion change case 10. Filter bag product expansion change case
Informant 9	Main branch	Native Marketing Dept. Director	Decision executor	1.Disposable nuisance dust mask product expansion change case 4.Battery sparator product deletion change case
Informant 10	Main branch	Administration Director	Decision maker Executor	2.Breast pad product deletion change case 5. Compounded respirator product expansion change case 6. Plant expansion one (main branch) 12. Plant expansion three (main branch)
Informant 11	Main branch	Vice General Manager	Decision maker Executor	2.Breast pad product deletion change case 3. Incohension material product expansion change case

		(Responsible for all production) (Two interviews)		9. Disposable coverall product expansion change case (SJZ branch) 10. Filter bag product expansion change case 12. Plant expansion three (main branch) 13. Top leader succession (FZ factory) 14. Plant expansion four (SZ branch) 15. Top leader succession (SZ branch)
Informant 12	FZ factory, main branch	Group Leader of Quality Controller in sewing workshop	Decision Executor	11.T/C cotton work uniform product expansion change case (FZ factory) 13. Top leader succession (FZ factory)
Informant 13	Main branch	Group Leader of Quality Controller in respirator workshop	Decision Executor	1.Disposable nuisance dust mask product expansion change case 8.Horizontal and vertical compounded respirator product expansion change case
Informant 14	Main branch	Technical Instructor for filter material	Decision Executor	3. Incohension material product expansion change case 6. Plant expansion one (main branch) 12. Plant expansion three (main branch) 14. Plant expansion four (SZ branch)
Informant 15	Main branch	Technical Advisor for filter material	Decision Executor	3. Incohension material product expansion change case 12. Plant expansion three (main branch)
Informant 16	Main branch	ISO9001:2000 and ISO14001:2004 Internal Auditor	Decision Executor	5. Compounded respirator product expansion change case 8.Horizontal and vertical compounded respirator product expansion change case 12. Plant expansion three (main branch)
Informant 17	SZ Branch	Marketing Director	Decision maker Executor	3. Incohension material product expansion change case 14. Plant expansion four (SZ branch) 15. Top leader succession (SZ branch)
Informant 18	SZ Branch	Administration and Production Director (Two interviews)	Decision maker Executor	14. Plant expansion four (SZ branch) 15. Top leader succession (SZ branch)
Informant 19	SJZ Branc h	Export Manager	Decision maker	5. Compounded respirator product expansion change case

		(Respirator) (Two interviews)	Executor	7. Plant expansion two (SJZ branch) 8.Horizontal and vertical compounded respirator product expansion change case
Informant 20	SJZ Branch	Export Manager (Filter)	Decision Executor	7. Plant expansion two (SJZ branch) 10. Filter bag product expansion change case
Informant 21	SJZ Branch	Export Manager (Coverall and work uniform) (Two interviews)	Decision Executor	7. Plant expansion two (SJZ branch) 11.T/C,cotton work uniform product expansion change case (FZ factory) 13. Top leader succession (FZ factory)
Informant 22	SJZ Branch	Import Manager	Decision Executor	3. Incohension material product expansion change case 7. Plant expansion two (SJZ branch) 9. Disposable coverall product expansion change case (SJZ branch)
Informant 23	FZ factory, main branch	Worker	Decision Executor	11.T/C,cotton work uniform product expansion change case (FZ factory) 13. Top leader succession (FZ factory)
Informant 24	SZ branch	Worker (Respirator workshop)	Decision Executor	8.Horizontal and vertical compounded respirator product expansion change case
Informant 25	Main branch	Lab master (main branch)	Decision Executor	3. Incohension material product expansion change case 5. Compounded respirator product expansion change case 8.Horizontal and vertical compounded respirator product expansion change case

Appendix VIII: Functions of Braches in HDHY
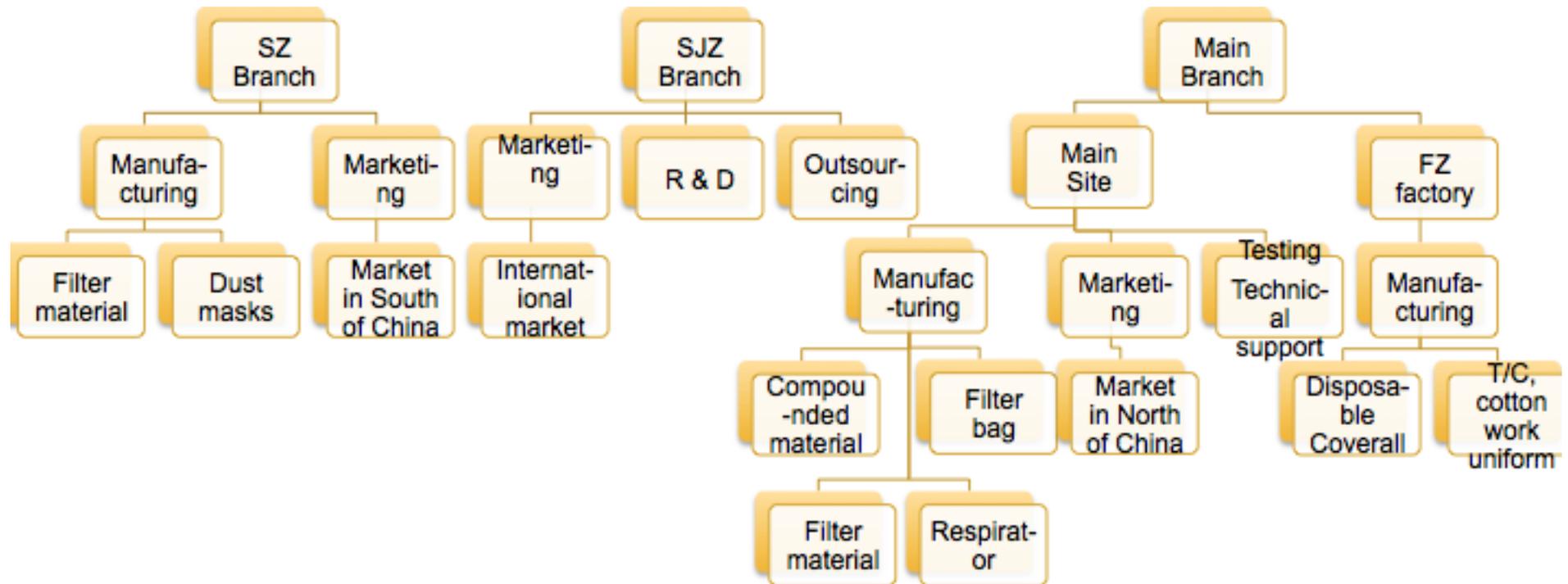
Appendix IX   Gross Domestics Products Statistics

Source: <<China Statistics Yearbook 2008>> from National Bureau of Statistics of China

2-1 Gross Domestic Product

Data in this table are calculated at current prices.

(100 million yuan)

Year	Gross National Income	Gross Domestic Product	Primary Industry	Secondary Industry	Industry	Construction	Tertiary Industry	Per Capita GDP (yuan)
1978	3645.2	3645.2	1027.5	1745.2	1607.0	138.2	872.5	381
1979	4062.6	4062.6	1270.2	1913.5	1769.7	143.8	878.9	419
1980	4545.6	4545.6	1371.6	2192.0	1996.5	195.5	982.0	463
1981	4889.5	4891.6	1559.5	2255.5	2048.4	207.1	1076.6	492
1982	5330.5	5323.4	1777.4	2383.0	2162.3	220.7	1163.0	528
1983	5985.6	5962.7	1978.4	2646.2	2375.6	270.6	1338.1	583
1984	7243.8	7208.1	2316.1	3105.7	2789.0	316.7	1786.3	695
1985	9040.7	9016.0	2564.4	3866.6	3448.7	417.9	2585.0	858
1986	10274.4	10275.2	2788.7	4492.7	3967.0	525.7	2993.8	963
1987	12050.6	12058.6	3233.0	5251.6	4585.8	665.8	3574.0	1112
1988	15036.8	15042.8	3865.4	6587.2	5777.2	810.0	4590.3	1366
1989	17000.9	16992.3	4265.9	7278.0	6484.0	794.0	5448.4	1519
1990	18718.3	18667.8	5062.0	7717.4	6858.0	859.4	5888.4	1644
1991	21826.2	21781.5	5342.2	9102.2	8087.1	1015.1	7337.1	1893
1992	26937.3	26923.5	5866.6	11699.5	10284.5	1415.0	9357.4	2311
1993	35260.0	35333.9	6963.8	16454.4	14188.0	2266.5	11915.7	2998
1994	48108.5	48197.9	9572.7	22445.4	19480.7	2964.7	16179.8	4044
1995	59810.5	60793.7	12135.8	28679.5	24950.6	3728.8	19978.5	5046
1996	70142.5	71176.6	14015.4	33835.0	29447.6	4387.4	23326.2	5846
1997	78060.8	78973.0	14441.9	37543.0	32921.4	4621.6	26988.1	6420
1998	83024.3	84402.3	14817.6	39004.2	34018.4	4985.8	30580.5	6796
1999	88479.2	89677.1	14770.0	41033.6	35861.5	5172.1	33873.4	7159
2000	98000.5	99214.6	14944.7	45555.9	40033.6	5522.3	38714.0	7858
2001	108068.2	109655.2	15781.3	49512.3	43580.6	5931.7	44361.6	8622
2002	119095.7	120332.7	16537.0	53896.8	47431.3	6465.5	49898.9	9398
2003	135174.0	135822.8	17381.7	62436.3	54945.5	7490.8	56004.7	10542
2004	159586.7	159878.3	21412.7	73904.3	65210.0	8694.3	64561.3	12336
2005	184088.6	183217.4	22420.0	87364.6	77230.8	10133.8	73432.9	14053
2006	213131.7	211923.5	24040.0	103162.0	91310.9	11851.1	84721.4	16165
2007	251483.2	249529.9	28095.0	121381.3	107367.2	14014.1	100053.5	18934

a) Since 1980, the difference between the Gross Domestic Product and the Gross National Income (formerly, the Gross National Product) is the net factor income from the rest of the world.

b) Data of the primary industry in 2005 and 2006 were adjusted according to the Second National Agricultural Census in 2006, data before 2004 were not adjusted.

Appendix X: The Comparative Chart - Historical Financial Performance of Case Organization Vs. the Increase Rate of National GDP in China
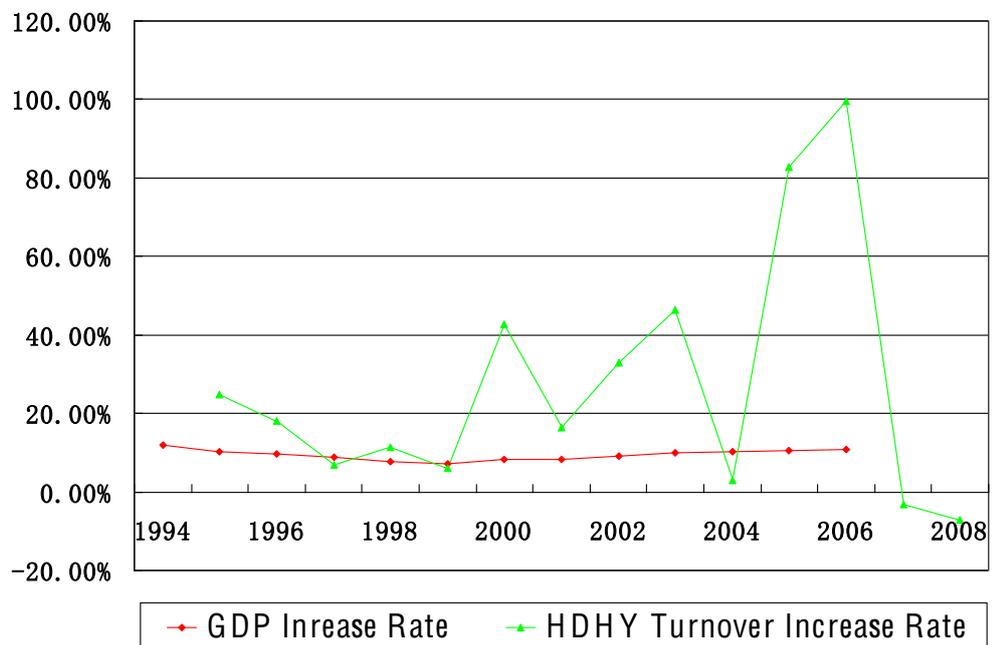
Appendix XI: Tabulation of Qualitative Data for General Performance Evaluation

Change Events	Advantage	Disadvantage
1.) Disposable Nuisance Dust mask product expansion Change Case (1,3,5,8,9,13)	• For fully utilizing the rest material of previous product; (1,5) • To save the cost for previous product; (1,3) • Being based on customer inquiry; (1,5) • New technology and product; (1,9,13)	• Being not know the processing technology; (1,5,8,13) • New market, new customers, unpredictable; (5,9) • Increased cost for market exploration; (9) • Long time workshop adjustment; (5,8,13) • Long time to achieve the first order; (5,9)
2.) Breast pad product deletion change case (1,10,11)	• "If we insisted, the losses would be more"; (1,11) • Very small market; (1) • Very little profit margin; (1)	• Facilities wasted; (11) • Available customers; (1,10)
3.) Incohesion Material product expansion change case (7,8,11,14,15,17, 22,25)	• Same target customer; (11,17) • Improved technology (8,14,25) • For wider market; (8,22) • Being based on customers' inquiry; (11,7) • Very expensive import product substitution (7,22)	• Big investment; (7,11) • Being not sure the profit margin; (11,14) • No firm order from customer; (11,17)
4.) Battery separator product deletion change case (1,8,9)	• "The customers did not pay on time, because they were mostly state-owned enterprises" (1,9) • Too much arrearage; Little flow capital available; (1,9)	• Facilities wasted; (1,8) • Still had available customers; (9) • No direct substitute products; (8,9)
5.) Compounded respirator product expansion change case (2,5,8,10,16,19,25)	• Better profit margin; (2,19) • High end product; (2,8) • Similar target customer as nuisance dust mask; (2,19) • Higher technology than previous product (2,5,8,25)	• Being not familiar with processing method; (2,5,8) • Long time to reach customers' satisfaction; (2,19) • Product standard certification needed for different continents' market, very expensive and hard to achieve; (2,8,16,25)
6.) Plant expansion one (1,2,3, 5,8,10,14)	• Expanded production capacity; (5,8) • New facilities; (1,3,5,8) • Better work environment; (5,8,10) • Being easier to get new workers in;	• Big investment (1,3) • Increased products' cost; (2,3) • Loan applying; (1,3) • Being under work pressure; (1,2,14)

		(5,10)
		• Long time workshop adjustment; (10,14)
	• Enough space, to start thinking of new product and technology development; (1,2,8,14)	
7.) Plant expansion two (SJZ branch) (2,19,20,21,22)	• Better customer service and satisfaction; (2,19) • Being easier hiring new staff with better education; (2,21) • Better work environment and staff loyalty; (2,19,20,21) • Having space for establishing sample room and show room in SJZ branch, being more professional; (2,20,22) • Increasing export, better long term prediction; (2,19)	• Increasing export cost (2,22) • Less efficient in interaction between two branches; (2, 19, 20, 22)
8.) Horizontal and vertical compounded respirator product expansion change case (2,4,5,8,13,16,19,24, 25)	• More product series to be chosen; (2,5) • More attractive to customers; (2,19) • Better quality and cost control; (4,5,13,24) • More product standard certification achieved; (8,16,25) • Similar target customers; (2,19) • Similar technology; (5,8,24)	• Less order for previous product; (2,19,24)
9.) Disposable coverall product expansion change case (2,4,11,22)	• For supplying a safety kit to customers; (2,22) • For better customers' satisfaction; (2) • Small quantity of existing customers; (2,4,22)	• No workshop; (2,11) • Order arrangement problems with cooperated factories; (2,11,22) • Little profit margin; (2,4,11) • New product standard needed; (2) • Unfamiliar market; (2,22)
10.) Filter bag product expansion change case (1,2,3,4,8,11,20)	• Being based on customers' inquiry; (1,2) • For better utilizing the raw material produced by themselves;(1,11) • Better profit margin; (2,3,20)	• Different market, very few existing customers; (2,20) • Higher technology; (2,8) • Big investment for production facilities; (3,4)
11.) T/C, Cotton work uniform product expansion change case (1,2,3,4,6,12,21,23)	• For better customers satisfaction; (2,21) • A few existing customer; (2,21) • Better profit margin; (2,21) • High end product; (1,2)	• New sewing workshop; (2,3,6) • New workers, new facilities, new rules; (3,4,6,21,23) • A big investment for workshop building and facilities; (1,2,3,6) • Increasing cost for exploration of new marketing; (2,3,21) • New technical persons hunting; (2,12,21,23)

12.) Plant expansion three (main branch) (1,2,3,4,6,7,10,11,14,15,16)	•More space for new product (1,4,11) • New facilities buy in; (3, 4,7) • Expanded production Capacity;(1,2,7,11,) • More workers ; (7,11) • More confidence; (1,2,11) • Adjusted company regulation; (2, 4,6,7) • Efficient change process, shorter than expectation; (3,11,15) • Regulations updating;(1,11,14)	• More loans; (3, 4) • Workshop rearrangement; (1, 11)
13.) Top leader succession (FZ factory) (2,6,11,12,21,23)	• New leader from local, being better to fit into organization; (6,12) • More communication with workers; (12,23)	• Long time adjustment period; (2,6) • New rules; (6,12,23) • Some workers left following with previous leader; (6,12) • Less efficiency; (2,6)
14.) Plant expansion four (SZ branch) (1,4,11,14,17,18,	• To save transport cost; (1,17,18) • With better customer satisfaction; (1, 17,18) • More efficiency to arrange the order; (17,18) • To create more higher job position, more job satisfaction (14,17,18)	• Being difficult to get skilled workers in other province; (1,18) •Increasing operational cost; (4,18) • Being not sure about the implementation (4,18) • Being short of technical support; (14,18) • With less profit (1,4,18) • Long term adjustment period (1,11,18)
15.) Top leader succession in SZ branch (1,11,17,18)	• Being more professional; (1,18) • With shorter change time than expected (11,17,18)	• Some workers left followed with previous leader; (11,18) • New operational rules; (17,18) • New workers; (11,18) • New market regulations; (1,17) • Long time for local culture adaptation; (1,18)
The number stands for informants: 25 Top managers: Informants 1, 2, 11,18 Middle Managers: Informants 3,4,5,6,7,8,9,10, 14,17,19 Staff: All the rest		

Appendix XII: Research Themes and Intercorrelations

Research objectives	Research Questions	Propositions	Authors Support	Interview Questions	Supported Change Event	Interviewees	Eviden-tiary Sources	Finding and Conclusion
To supply the introduction of the various change levels and change types in both theoretical camps of organizational change, to integrate a model from both managerial theories and ecological theories;	How and why do the organizational changes lead to different change consequences on performance?		Aldrich, 1979; Amburgey et al., 1993; Astley & Van de Ven, 1983; Balogun & Hailey, 2004; Barnett & Carroll, 1995; Baum,1990; Burns & Stalker, 1961; Carroll, 1984; Clement, 1994; Cyert & March, 1963; Delacroix & Swaminathan, 1991; DiMaggio & Powell, 1983; Dobrev et al., 2003; Galbraith, 1977; Greiner, 1972; Greve, 1999; Hannan & Freeman, 1984; Hannan et al., 2003a, 2007; Haveman, 1992; Hellriegel & Slocum, 1978; Herriott, Levinthal, & Match, 1985; Kelly & Amburgey et al., 1991; Lawrence & Lorsch, 1967; Levinthal & March,					The results suggested a possible valuable way which adds to the new stream that disentangles the propositions to direct examine the elements influencing in change process and consequences on performance functions escaping from the binary distinction between two camps of organizational adaptation and selection. The data analysis and results of this chapter proposed
To supply		Proposition	1981; Levinthal, 1991;	2. Please give an description about	3.) Incohension	Informants	Interviews	them as

empirical evidence to examine the effect of previous change types and the likelihood of re-adoption in the future from the selected change events in case organisation;		1: There is a positive relationship between the experience of a type of change previously experienced and the likelihood of adopting the same type of change in the future.	Lewontin, 1978; March, 1981; March & Simon, 1958; McKelvey, 1982; Meyer & Rowan, 1977; Meyer & Scott, 1983; Miles & Snow, 1978; Miller & Friesen, 1984; Mintzberg, 1978; Mintzberg, Ahlstrand, & Lampel, 1998; Nelson & Winter, 1982; O'Reilly & Tushman, 2008; Pfeffer, 1983; Scott, 1981; Singh, House, & Tucker, 1986; Sorensen & Stuart, 2000; Stinchcombe, 1965; Thompson, 1967; Tushman et al., 1997; Zuker, 1983; Amburgey et al., 1993; Amburgey & Miner, 1992; Bate, 1990; Cyert & March, 1963; Dobrev et al., 2003; Hannan & Freeman, 1984; Hannan et al., 2003a, 2007; Haveman, 1992; Jacobs, Christe-Zeyse, Keegan, & Polos, 2008; Kelly & Amburgey, 1991; Miller, 1992;	one change case you were familiar or experienced. 4. Who were involved in making the change decision? Who authorized the change decision? 5. Were there any conditions placed upon the change decision? For instance, company financial performance or external environment conditions. (Proposition 1,4) 6. What degree of consensus was there within top managers' team about the change decision which was made? Did you affected by other group members? (To manager informants) 7. What degree of consensus was there between all the involved departments about the change decision as you known? (Proposition 5) 8. Was your change decision or change process ever influenced by other issues, i.e., political influence or any interpersonal relations impact? If yes, please give an	material product expansion change case; 4. Battery separator product change case 5. Compounded respirator product expansion change case 7. Plant expansion two (SJZ branch) 8 Horizontal and vertical compounded respirator product expansion change case 9. Disposable coverall product expansion change case (SJZ branch) 10. Filter bag product expansion change case 12. Plant expansion three	No. 7, 8,11, 14,15,17, 22,25 Informants No.1,8,9 Informants No. 2,5,8,10, 16,19,25 Informants 2,19,20, 21,22 Informants No.2,4,5, 8,13,16, 19,24,25 Informants No.2,4, 11,22 Informants No.1,2,3, 4,8,11,20 Informants No. 1,2,3,6,	; Company documents;	complementary.
								The result showed that the positive relations of the effect of previous change type on change type prediction can be seen in majority of change cases in case organisation in safety and filtration industry of China. Hence, the result from this part of the study supported the proposition one of this study, and it matched the view in the work of Amburgey et al., (Bruton and Lau, 2008), Hannan and Freeman (1993), Nelson and Winter

			Miller & Chen, 1994; Nelson & Winter, 1982; Schein, 1991; Sorensen & Stuart, 2000; Stinchcombe, 1965;	example. (Proposition 1,5,6) 9. Do you prefer to use a certain type of change? Did it implement before? Would you like to adopt it again in the future if possible? (To top and middle manager informants) 10. Do you have a model for organizing a change? For instance, reference to your previous experiences or reference to the model of your competitors'. How long of recent leadership regime was in your company? (To top and middle manager informants)	(main branch) 14. Plant expansion four (SZ branch) change case (FZ factory)	7,10,11,14,15,16 Informants No. 1,4,11, 14,17,18		(1984), and the work of Sorensen and Stuart (1982).
To provide primary data to examine the effects of various change distances on financial performance by integrating the		Proposition 2: There is a significant relationship between the extent of niche expansion and the change effect on performanc	Amburgey et al., 1993; Audia, Locke, & Smith, 2000; Barnett & Carroll, 1995; Brittain & Wholey, 1990; Carroll & Hannon, 2000; Clark, 1985; Daft, 1983; Delacroix & Swaminathan, 1991; Dobrev & Barnett, 2002; Dobrev et al., 2003; Grant, Jammine, & Thomas, 1988; Greve, 1999; Hannan & Freeman, 1977; Hannan & Freeman, 1989;	11. Do you think which product of your organisation was related with the original products or technology when they were newly improved? Were their target customer's same/similar with previous ones? 12.Do you think it matter that whether the new product is related or unrelated to previous products? Why? For instance, were there obvious different performance consequences?	1.Disposable nuisance dust mask product expansion change case 3. Incohension material product expansion change case; 8 Horizontal and vertical compounded	Informants No. 1,3,5,8,9,13 Informants No. 7, 8,11, 14,15,17, 22,25 Informants No.2,4,5, 8,13,16,	Interviews Company Financial data records	The results from the analysis of financial performance are parallel with those from interview responses. Six out of seven estimates were in the predicted direction. Agreeing with the finding of Miller and Chen (1989), Barnett and

ecological niche expansion change type model and managerial diversification model in case organisation of safety and filtration industry in China;		e. The more unrelated the new niche moves are to previous domains; the more organizational performance is likely to be negative.	Hannan et al., 2007; Haveman, 1992; Henderson & Clark, 1990; Keats & Hitt, 1988; Levine & White, 1961; March, 1991; Miller & Chen, 1994; Nelson & Winter, 1982; O'Reilly & Tushman, 2008; Ramanujam & Varadarajan, 1989; Romanelli, 1989; Rumelt, 1982; Singh et al., 1986; Thompson, 1967; Tushman & Anderson, 1986; Weick, 1969;	13. Did any new product expansion or new technology application brings the negative effect, in which aspect? Was there any influence on the existing products? 14. Did the new product or new technology application bring the positive effect and in which aspects?	respirator product expansion change case 9. Disposable coverall product expansion change case (SJZ branch) 10. Filter bag product expansion change case 11.T/C, cotton work uniform product expansion change case (FZ factory)	19,24,25 Informants No.2,4, 11,22 Informants No.1,2,3, 4,8,11,20 Informants No. 1,2,3,4,6, 12,21,23		Carroll (1994), Greve (1995), Audia et al., (1999), and Hannan et al., (2000), these results support Proposition 2 in this paper.
To develop a dynamic performance measurement model that takes the interactive effect of organizational changes into account,		Proposition 3: The instant effect of organizational changes is harmful, but declines over time. The organizatio	Astley, 1985; Barnett, 1990; Brittain & Wholey, 1990; Carroll, 1984; Delacroix & Swaminathan, 1991; Dobrev et al., 2003; Freeman & Hannan, 1983; Gersick, 1991; Hannan et al., 2007; Haveman, 1992; Jauch, Osborn, & Glueck, 1980; Keats & Hitt, 1988; Kelly & Amburgey, 1991; Meyer & Scott, 1983; Pfeffer &	15. Was there any other change event in your company you know which was obviously harmful to financial performance (i.e. market sales)? Was it related with organisational mission, authority structure, and technology and marketing strategy? 16. Do you think there were any other reasons for that this harmful effect was leaded? For instance,	From the results of interview: 1.Disposable nuisance dust mask product expansion change case 3. Incohension material product expansion change case;	Informants No. 1,3,5,8,9,13 Informants No. 7, 8,11, 14,15,17, 22,25 Informants	Interviews Company Financial data	From the evidences of both financial data and interview responses, the results that the organisational change might benefit the performance under the environment transformation in the long term, were

considering performance measurement critique in previous organizational changes researches;		nal change might benefit the performance in the long run under the context of environmental transformation.	Salancik, 1978; Romanelli, 1989; Singh et al., 1986; Stinchcombe, 1965; Wholey & Brittain, 1989;	unforeseen problem or cooperation issue in the change process. (Proposition 3,4,5,6) 17. Was there any other change you experienced in your company did benefit to the financial performance(i.e. market sales)? 18. Did it influence the previous operational routine? Was this change related with part of organisation or whole company? Please describe to what extent of this change case implemented? And under what external conditions? (Proposition 3,4,5,6) 19. Did it reflected on financial performance straight away or sometime later? 20. Do you remember that there was some change events incurred because of the company financial performance was very good at that time? I mean better than normal. Was the performance getting better or worse after change event? Was that obvious effect temporarily or not?	5. Compounded respirator product expansion change case 6. Plant expansion one (main branch) 7. Plant expansion two (SJZ branch) 8 Horizontal and vertical compounded respirator product expansion change case 9. Disposable coverall product expansion change case (SJZ branch) 10. Filter bag product expansion change case 11.T/C, cotton work uniform product expansion change case (FZ factory) 12. Plant	No. 2,5,8,10, 16,19,25 Informants No.1,2,3,5, 8,10,14 Informants 2,19,20, 21,22 Informants No.2,4,5, 8,13,16, 19,24,25 Informants No.2,4, 11,22 Informants No.1,2,3, 4,8,11,20 Informants No. 1,2,3,4,6, 12,21,23 Informants		observed in this study. Agreeing the work of Singh et al., (Hannan and Freeman, 1984), Delacroix & Swaminathan (1986), Kelly & Amburgey (1991), and Haveman (1991), the result of this section supported Proposition 3 that the instant effect of organisational changes is harmful, but it declines over time. The organisational change might benefit the performance in the long run under the context of environmental transformation in the case organisation under the context of safety and filtration industry of China.

| | | | Proposition 4: Poor performance is easier to promote organizational change. The pre-change performance can moderate the change | Amburgey et al., 1993; Boeker & Goodstein, 1991; Boeker, 1997; Brown, 1982; Clement, 1994; Cyert & March,1963; Brown, 1982; Denis, Lamothe, & Langley, 2001; Dosi, 1984; Dutton & Duncan, 1987; Eisenhardt, 1989; Eisenhardt & Martin, 2000; Greiner, 1972; Greve,1999; Finkelstein & Hambrick, 1996; Hannan & Freeman, 1984; Harrison & March, 1984; Haveman, 1992; | 21. Do you remember that there was some change events incurred because of the company performance was poor at that time? Was the performance getting better or worse after change event? How long did the effect last? 22. Please give an general evaluation to the change case you remembered about their performance within half year and their performance in about one year. 23. Do you notice that in what periods or usually for what reasons that your organisation is more likely to generate changes? | expansion three (main branch) 14. Plant expansion four (SZ branch) change case (FZ factory)

From the result of financial data: Change case No. 1,2,7,9,10,11,12,15

From the result of financial data for first part of Proposition 4: 3. Incohension material product expansion change case; 4. Battery separator product change case 13. Top leader succession (FZ | No. 1,2,3,6, 7,10,11,14, 15,16 Informants No. 1,4,11, 14,17,18 | Interviews Company Financial data | From the results of both interviews and the financial data records in the case organisation in safety industry of China, the results of this section did not show clear evidence to support the predication of this part of Proposition 4 in this thesis. And it did not match the |

| | | effect, comparing the pre-change performance with the mean; the change consequence on performance is more likely to be reversed. | Hinings & Greenwood, 1988; Kahneman & Tversky, 1979; Keisler & Sproull, 1982; Kotter et al., 1992; Lant & Montgomery, 1987; Levinthal & March, 1981; March & Simon, 1958; March, 1981; March,1991; Meyer & Rowan, 1977; Miller, 1993; Miller & Chen, 1994; Miller, Lant, Milliken, & Korn, 1994; Milliken & Lant, 1991; Mintzberg, 1983; Ocasio, 1994; Pettigrew & Whipp, 1991; Pettigrew et al., 2001; Singh et al., 1986; Smith et al., 1994; Sorensen, 2002; Steindl, 1980; Tushman & Romanelli, 1985; Wiersema & Bantel, 1992; | | factory) 15. Top leader succession (SZ branch)

From the result of financial data for second part: 10. Filter bag product expansion change case 14. Plant expansion four (SZ branch) change case (FZ factory) | | | finding of the work carried out by March (1993), Amburgey et al., (1991) and Greve (1993). |

Research objectives	Research Questions	Proposition-ns	Authors Support	Interview Questions	Supported Change Event	Interviewees	Eviden-tiary Sources	Finding and Conclusion
To supply the descriptive evidences and trace the change processes, to examine the effect of organizational characteristics, and the relationship between change length and change effect, by considering managerial ambidexterity theory and		Proposition 5: The length of the change process negatively affects the change consequences. Organizational characteristics-intricacy, viscosity, opacity and asperity extend the length of the organizatio	Balogun & Hailey, 2004; Balogun & Johnson, 2005; Barnett and Carroll, 1995; Barnett & Freeman, 2001; Baron et al., 2001; Burgelman, 1991; Clement, 1994; Edelman, 1992; Greiner, 1972; Hannan & Freeman, 1984; Hannan et al., 2003a; Hannan et al., 2007; Hatch & Schultz, 2002; Henderson & Clark, 1990; Hofstede et al., 1990; Jacobs et al., 2008; Kelly & Amburgey, 1991; Lant & Mezias, 1992; Li, 2007; Lin, 2005; Lu, 2007; March & Simon, 1958; March, 1991; Martin & Siehl, 1983; Mintzberg et al., 1998; Nee & Su,1990; O'Reilly & Chatman, 1996; O'Reilly Tushman, 2008; Ravasi & Schultz,2006; Sorensen, 2002; Stinchcombe,	24. Was there a details implementation plan for completing the change in advance, including time schedule and deadline? How long did it actually take? 25. What was the extent to which the job description of your group and the overall goals of change had been distributed, how far was it understood? And after how long did you react it? 26. Do you think how much you know the strategy of your organization? What is the current method of internal communication? 27. Did you summarize in advance that what barriers might disturb you before the change started? Did you have the details plan to resolve? 28. During the change process, was there any barrier which is unexpected? Please give an	From the results of interviews for characteristic of Intricacy: Change case No. 2,4,6,10,11,12,14 For the characteristic of Viscosity: Change case No. 1,7,10,11,14; For the characteristic of Opacity: Change case No. 1,3,4,5,6,8,9,11,12,14,15 For the characteristic of		Interviews Company documents, Company financial data, Observations	Overall, the results of empirical data in above sections agreeing the views in organisational selection studies, supported the predication of Proposition 5 from both the results of interview responses and observation records under the research context of safety and filtration industry in China, agreeing the work carried out by Nee & Su (Mintzberg et al., 1998, Greiner, 1972), Burgelman (1990), Hannan et al., (1991)

| newly improved ecological theories - cascading change and organizational characteristics of intricacy, viscosity, opacity and asperity under the safety and filtration industry in China; and

To explain and distinguish the effect of change content and process of various | | nal change process.

Proposition 6: There is the | 1990; Tushman & O'Reilly, 1997; Williamson, 1975; Zhong, 2007;

Adner & Helfat, 2003; Audia et al., 2000; Eisenhardt & Martin, 2000; Gulati, Dialdin & Wang, | example.
29. Do you think the resources i.e., financial, administrative, staffing, time, technology etc.) for that change event were available?
30. Where did you seek for additional resources if the need arised during the change process?
31. What was the extent to which your group could approach the top managers team if some modification was needed to be suggested during the change process? (To middle manager informants and general staff informants)
32. During the change process, how did the staff in relevant department react and adapt?
33. Was there any influence on change implementation in change process by organisational structure? For example, what was the format of your change project management? Did your company specially pick up person from different relative departments to | Asperity: Change case No. 1,4,10,11,13,14, 15

From the result of financial data for the first part of Proposition 5: Change case No. 1,3,9,11

From the results of interviews for characteristic of | |

Interviews Compa ny | and the work of Hannan et al., (2003a). There was no clear evidence from the financial records for the relations of change length and change outcome. Moreover, the possibility that the change length could be over-estimated due to the characteristic of opacity, was also shown from the result of interview responses, it was based on the condition that similar change types were implemented before and they had some experiences.

From the results of interview responses, the information |
|---|---|---|---|---|---|---|---|

| organizational change events in the safety and filtration industry in China; | | possibility of simultaneously achieving flexibility and efficiency in the organizational change processes. | 2002; He & Wong, 2004; Macpherson, Jones, & Zhang, 2004; O'Reilly & Tushman, 2008; Teece, Pisano & Shuen, 1997; Teece, 2006; Winter, 2000; Zott, 2003; | make a temporal change project team or keep as pervious management? What level of power this change project team can have? 34. Can you give attention to daily management during the change process as well as previously? How did you try to balance? 35. Did you have to give up some marketing plan (for example, give up a business visiting or exhibition) for the change project? 36. What aspect of the change process was modified, and for what reason? 37. Was there any other change decision being made during the implementation of this change? Was it made initiatively or passively? For instance, was there any top manger left the firm or a new top manager was appointed during the spell? 38. Do you think the additional change decision helpful or not eventually to reach the original change aims? Please give an | efficiency: Change case No. 2,8,12,15 From the results of interviews for characteristic of flexibility: Change case No. 3,6,8,11,12 From the result of interviews, documentation and observation note, for Proposition 6: Change case No. 8 Horizontal and vertical compounded respirator product expansion change case 12. Plant expansion three (main branch) | Informants No.2,4,5, 8,13,16, 19,24,25 Informants No. 1,2,3,6, 7,10,11,14, 15,16 | documents, Observations | extracted from the company document, and the observation records, the empirical data showed that there were possibilities of simultaneously achieving flexibility and efficiency in the change cases under this research context, only if based on that the organisation had the previous change experiences of the certain type. Although there were limited number of change cases supporting the result - two out of fifteen change cases were evaluated with both efficiency and flexibility characteristics in the change processes, which demonstrated |

				example in which aspects it was helpful or harmful. 39. If comparing with the process of change events incurred in main branch and other branches, which change need more time and more complicated? Why? Can you give me an example? 40. What extend did you adapt to 'company's generic behaviour' when you join this company? About how long? 41. Please assess the culture strength of your own company as well as five other familiar firms in the same industry, and make a list from strongest one. Indicators for strong culture: a.) the company has been managed according to long term standing policies and practices; b.) the company makes its value known through a creed and makes a serious attempt to urge the managers to follow; c.) managers speak their company's style or doing things commonly.			that it was normally hard and rare to achieve ambidexterity in organizations, it supported the views in adaptation theoretical camp, and supported Proposition 6 with the condition that if the organisation have the change experiences of that certain type.

				42. Was there any performance measurement during the change process?				
				43. Do you think there was some relationship between change length and change effect? Is it longer or shorter better for change effect on performance?				
				44. Do you think the change processes usually take longer or shorter than expected?				
				45. Do you think the unforeseen issues which were happened in the pace of change process were more than those in other management decisions' implementation or not?				
				46. How did you judge whether a change had been finished or not? How did you assess the success or failure of the change?				

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