

Managing the Asian Century

Check Teck Foo *Editor*

Diversity of Managerial Perspectives from Inside China

 Springer

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Diversity of Managerial Perspectives from Inside China

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Foreword

Confucius the Great Sage of Learning once said in Chinese: 开卷有益 (*kai juan you yi*). It is often rendered in English as: “You cannot open a book without learning something.” More precisely: “Unroll a Scroll and Benefit.” For during the Spring and Autumn period, there are no books as we know of it now but scrolls of bamboo slips. Also the Chinese characters are written differently, more alike to what is shown in Fig. 1 below:

Whatever its form, the principle embedded in this saying, however, applies with equal force today to this substantial work *Diversity of Managerial Perspectives from Inside China*. It is probably the first book of its kind in the world to be emphasizing a diversity of insights of professors *from inside* [of] *China*. Moreover in this book are deep insights as derived by researchers through planned investigative research utilizing empirical studies.



Fig. 1 Source: Circa 300 BCE Shanghai Museum (Wikipedia)

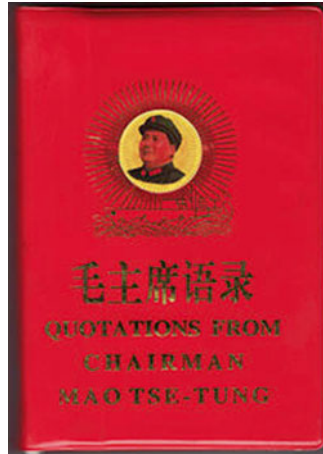


Fig. 2 1966 Bilingual Edition (Source: Wikipedia)

The late Mao Zedong himself had emphasized investigative approaches to problem-solving. Indeed there is in Mao's *Little Red Book* (Fig. 2) (毛主席语录: *Máo Zhǔxí Yǔlù*) at Chapter 23 titled specifically as 调查研究 (tiao cha yan jiu) that may be rendered as “Investigation and Study” or alternatively “Investigation Through Research.”

It is interesting here to quote the exact words of Mao Zedong from this Chapter. He first put it rhetorically as is his style:

你对于那问题不能决么?(ni dui yu na wen ti bu neng jue me)
Or as rendered in English: You can't solve a problem?

Then he answered:

那末, 你就去调查那个问题的现状和它的历史吧!(na wei ni jiu qu tiao cha na ge wen ti de xian zhuang he ta de li shi ba!)

Again in English: Well, get down and investigate the present facts and its past history!

By design and selection from submissions, Editor and Research Professor Foo Check Teck had strung together a comprehensive selection of topics relevant to management. The contributors are made through invitations to professors who had made presentations at the Global Chinese Management Studies Conference in Singapore (2012–2014).

The issues featured are those that should be of significant concern to top management. If you are managing an organization within China, this book should be part of your essential reading. Unlike other books, many of the insights are gained through professors embarking on empirical research. The four key themes are on governance, risk, technology, and value. Each of these is investigated with relevance to situation in China.

These topics are consistent with President Xi Jinping's Four Comprehensives (四个全面: sig ge quan mian): prosperous society, deepening reform, and governance of law and party. The first theme on governance is resonated in the last two comprehensives. Risk and technology relate to a continuing reform of economy for prosperity.

What the West has so far yet to fully appreciate is the uniqueness of the Chinese approach to management. There is a sharp contrast between the USA and China. Unlike the USA which is young, approaching 239 years, China is so ancient. Beginning 2100 BCE the country was already managed under a dynastic rule: the Xia Emperors. Most relevant to scholars, written records of China can date as far back as 5,000 years.

As exhorted by Mao Zedong, scholars doing research on Chinese management should not altogether turn a blind eye to a deep, rich historical resource. According to Foo Check Teck, a world-renowned scholar knows from his own research that the classic text of the 2,500-year-old Art of War by Sun Tzu remains very relevant even today for management.

Moreover in terms of size, the USA with 390 million, even though a superpower, is smallish relative to China's nearing 1.4 billion. What is often forgotten is that China has the world's largest ethnic group: 1.3 billion Han Chinese. Almost a fifth of the world's population is integrated by common roots. Despite its significance, this culture is not adequately reflected in Western management journals.

I hope this work by Professor Foo Check Teck, founding editor in chief of *Chinese Management Studies* (SSCI) from our School of Management at Harbin Institute of Technology, will provide deep insights to the readers on issues related to governance, risk, technology, and values in the Chinese context. Perhaps, it may be useful too to have an edition of this book in the Chinese language!

Harbin, Heilongjiang, China
August 2015

Bo Yu

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He held visiting professorships globally: Europe (visiting professor, Umea University, Sweden; consulting professor, INSEAD, France; and honorary research professor, College of Business, Denmark), USA (visiting professor, New York Institute of Technology, and visiting distinguished professor, City University of New York), and Asia (ASEAN Distinguished Professor, University of Malaya; visiting professor, SolBridge International School of Business, Korea; and government fellow, Japan Productivity Center, Tokyo).

He had published more than 100 papers, many in refereed journals across major disciplines. His books won accolades: *Productivity in Transition* (Silver Award), *Organizing Strategy* and *Sun Tzu and Management* (UK Blackwell in Oxford: *Spring's Choice* and *Book of the Month*, respectively), and *Reminiscences of an Ancient Strategist* (Singapore's top NBDCS book prize). Emerald Publishers, UK, recognized with a special award his special contributions as the founding editor of *Chinese Management Studies* (founded 2007, SSCI 2011).

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Part I
Introduction

Chapter 1

Overview: Governance, Risk, Technology, and Value

Check Teck Foo

Abstract In this chapter the editor provides his overview, firstly, on China vis-à-vis two sets of countries, the developed and the developing, and, secondly, the diversity of insiders' perspectives on these themes: governance, risks, technology, and values. Against the USA, the UK, Japan, and Germany, China on the basis of factual data of per capita performance still lags far behind. However when benchmarked against developing cluster (say, Brazil or India), China leads the pack. With instantaneity through the Internet, China should rapidly be overtaking even the USA on technology. The background of how this unique book of readings emerged from professors attending the series of *Global Chinese Management Studies Conferences* is provided. The roots to these Conferences may be traced to authors' workshop at *Zhong Shan Da Xue* (Sun Yat-sen University), Guangdong, China. In the editor's opinion, China is in phased transitions. What once prevails under Hu Jintao may be less relevant under Xi Jinping. Thus managers ought not to rely on rhetoric but gain insights from deep empirical research. Under governance, contributors captured changes in corporate social responsibility (CSR), the governance of capital markets and to the entire country, and the fusion of accounting information. Risk is an increasingly critical dimension of management, and authors emphasized three very different aspects: financial warning system, consumer-oriented risk insurance, and corporate philanthropic actions. Diverse topics of new product development, entrepreneurship in forestry and eco-labels are put under technology. Values include these: corporate values, *I Ching* and leadership (destructive). The editor hopes this *Diversity of Managerial Perspectives from Inside China* may become the basis for discussion forums.

Keywords China • Chinese management conference • Governance • Risks • Technology • Values • Diversity of perspectives

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1.1 Introduction

Why the limiter *Inside China* is the title of this book?

If you note the main contributors (corresponding authors) are all from the inside of China (inclusive of Taiwan). In other words, these are very much Chinese perspectives to managing. The scholars however adopt predominantly Western scholarly approaches. I have lectured on Social Research Methods and found there to be a continuing divide between the USA and Europe on methodology. The USA in contrast to the German school emphasizes (overly so) the role of statistics in sociological research. In China there seems to be too much of an aggrandizement of statistics in the research process. Human behavior and processes that underlie management are by far more complex.

Often statistics are abused. The *fast* rise of China sometimes clouds the minds of economists. Fear is bandied around of China becoming the world's largest economy. Yet it may be some more years (say, 300: see Fig. 1.1 below) before China can truly overtake the USA (the UK, Japan, and Germany) on GDP per capita: a far better reflection of a country's economic prowess. That is if we assume a convergence by visual extrapolation on past trends (utilizing Angus Maddison). Yet with instantaneity of the Internet and Confucian self-learning ethos, 5,000-year-old China will soon be reemerging as the world's dominant country.

That is why it is so essential for managers in the West to stay regularly updated through reading, reflecting, and thinking about China. As the founding editor in chief of *Chinese Management Studies*, I will continue to stress during conferences that Chinese management does not equate simply with statistics. There is more. The good scholar doing research on Chinese management has to go beyond the sciences whether statistics, mathematics, or artificial intelligences.

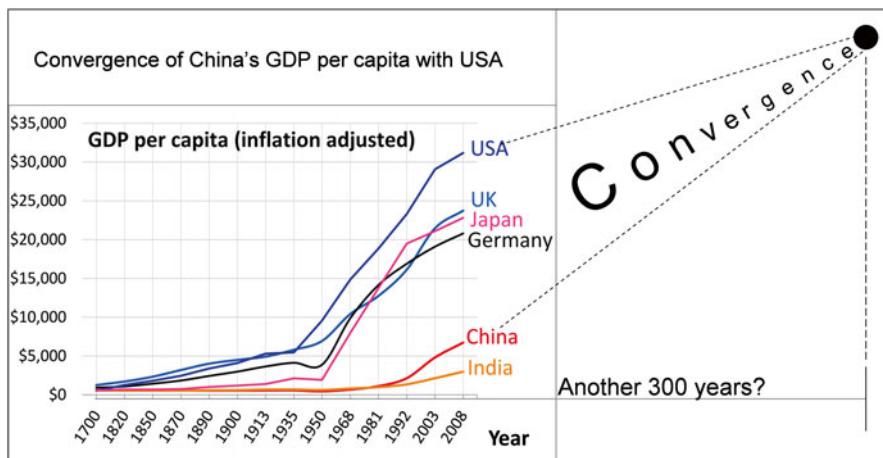


Fig. 1.1 Adapted from Angus Maddison (Wikipedia) by extrapolating visually

1.1.1 Background

In this introductory chapter, I shall also explain the background to this book: it is a selection of invited contributions. All authors, professors from leading universities inside China (including Taiwan), had participated in the 3-day *Global Chinese Management Studies Conference* over the period from 2012 to 2014. Unlike many other larger-scale American conferences, this is a boutique and research-focused meeting. We like to encourage authors to build bonds with each other through these conferences.

The root to this series of conferences lies in a 2009 Research Discussion Group for Chinese Management Studies (published by Emerald Publishers, UK) at China Europe International Business School (CEIBS). It was organized with the support of the then Dean of CEIBS, Professor Rolf Cremer. He is a member of the Editorial Advisory Board of the journal of Chinese Management Studies. Professor Xiao-Hui Wang, a regional editor (China), was with me at the launch of this initiative.

Undaunted by the rather small number of respondents, we persisted with the authors' workshop in 2010. This is when we successfully kicked off a half-day workshop at Lingnan College within Zhong Shan Da Xue (Sun Yat-sen University) (see Fig. 1.2a, b). For this I must thank Professor Xiao-Hui Wang who organized the author's workshop with sponsorship of both the College, Aventis School of Management (the largest US educational center), Singapore, and Emerald Publishers. Professor Li-Fan Wu then Dean of Lingnan College (now, California State University) and Mr. Samuel Teo the General Manager of the School are both very keen to help to foster research on Chinese management.

The series of annual conferences 2011–2014 are organized by the Sun Tzu Institute (www.suntzuinstitute.com), and all these are held in Singapore at the Aventis School of Management, Concorde Hotel. There is no guest of honor for the Conference delivering a speech: everyone present is there for research on Chinese management. At the 2014 Conference, we centered on authors' presentations of their papers (later, ideas) for consideration by guest editors of the journal. The journal was founded in 2007 by me as the founding editor and entered the Social Sciences Citation Index (SSCI) in 2011.

The goal for future conferences is for authors to share possibilities of working with other professors for innovative papers. The Conference is visually documented so anyone can get a sense of the proceedings. These may be accessed on the Internet (see Internet resources). Most intriguingly, over a span of four years, more than 60 universities (many top tier) from China had participated in these Conferences (see [Appendix](#) for names of the universities in both English and Chinese).

1.2 Diversity of Perspectives

On the basis of the papers submitted, the authors are then invited to submit chapters for this book. Our target audience is for the managers, those who have had MBA or are undergoing such training. Just how diverse are the topics to warrant the title of



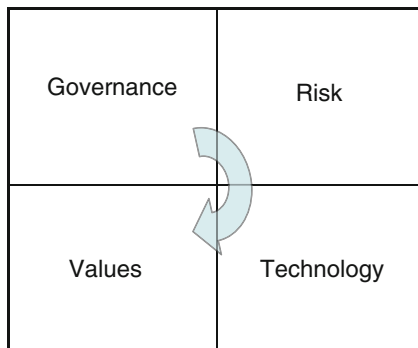
Fig. 1.2 (a) Meeting (Li-Fan Wu, Samuel Teo, Check Teck Foo, and Xiao-Hui Wang). (b) First authors' workshop at Lingnan College, Zhong Shan Da Xue

Diversity of Managerial Perspectives Inside China? The topics grouped into five main parts are shown in Fig. 1.3 under keywords as follows: governance, risk, technology, and values.

It is a fact that books on management rarely provide such an overarching reach of diverse topics. Yet as will be explained later, these topics are interconnected with one another. If you pride yourself as a holistic manager, then one way to stay updated is to read the scholarly works of leading Chinese professors.

Beyond Part I which comprises of this chapter providing a survey of the book is these key topics (see Fig. 1.3, clockwise): governance, risk, technology, and values. Part II enables you to appreciate how corporate social responsibility is growing to be of great importance among the listed corporations and the evolving nature of governance of the capital markets and governance of China as a country. The

Fig. 1.3 Diversity of managerial perspectives from inside China



additional chapter introduces a probability grounded process for the fusion of information for corporate decision making.

From governance, the theme of the next selection of chapters turns to managing risks. Risk as seen from multiple perspectives: firstly, in the need for developing a financial warning system (incorporating earnings); secondly, approaching the insuring of risks from consumers' perspectives; and, thirdly, how corporations had (for reader, ought) to be responding charitably to major disasters.

Part IV is themed as technology. Increasingly technology now defines success. Thus there is a chapter on role of technology management in developing new products. This is followed by entrepreneurial innovation especially in rarely discussed industrial sector of forestry and eco-labeled products. Part V, values, brings together chapters emphasizing Chinese philosophy, values, and culture. What makes China so different from the rest of the world are in her unique, deeply rooted beliefs as a Chinese civilization.

In the next section, an overview of chapters is provided.

1.3 Overview of Chapters

There are five parts to this book of 14 Chapters.

The first part is the Introduction with this sole chapter. Here I provide as editor an overview of the Parts as well as the Chapters that comprise the part. Now the central theme of Part II is on governance. Chapter (2) is our combined work, Li Yuan-Hui, Associate Professor, Beijing School of Economics and Management, Beijing Jiaotong University (Beijing), and Foo Check Teck, Research Professor (University Researcher), School of Management, Harbin Institute of Technology (Harbin, Heilongjiang): Managing Corporate Social Responsibility (CSR) in China. The critical insights are summarized and tabulated in the next section. Corporate social responsibility (CSR) is now a topic of growing global interest. Not surprisingly China too emphasizes social responsibility of organizations including the listed corporations.

Following this is Chap. (3): Transformation and Institutional Change in Corporate Governance by Du Mian, Professor, the School of Business, Shantou University, and Gu Liang, postdoctor, Institute of Banking and Finance, Chinese Academy of Social Sciences, and China Securities and Regulatory Commission. Here the authors view at corporate governance longitudinally beginning from the reform of the economy. They then provided a framework of Chinese capital market transformation into phases. Chinese capital market is now (since 2012 up to this day) maturing.

Then Associate Professor Xin Zhang, School of Public Administration and Policy, Renmin University of China (Beijing), in Chap. (4) explores governance at the overall country (China) level through his piece titled as: Emerging Polycentric Pattern in Governing Transitional China. Part II closes with Chap. (5) where Duan Xin Sheng, Associate Professor, School of Accounting, Capital University of Economics and Business, develops on Accounting Information Fusion for Decision Making.

In Part III, the attention turns toward risk. In Chap. (6) Wu Peng, Associate Professor, School of Economics and Management, Southeast University (Nanjing) Gao Lei, Assistant Professor, State University of New York, and Wang Qiong, a master student at Fudan University (Shanghai), explain an Early Warning System for Finance. Jiaojue Ge, Shenzhen Graduate School, Harbin Institute of Technology (Shenzhen) Zhao Jie, Nielsen Company, and Nisar Shoaib, doctoral student, Shenzhen Graduate School, Harbin Institute of Technology, explore in Chap. (7): New Consumers' Perspective in Insuring Earthquakes. Then Wang Fei and Wei Jiu-Chang Associate Professor, School of Management, University of Science and Technology (Hefei) discuss in Chap. (8) about Corporate Eleemosynary Behavior. These chapters provide a closure to Part III.

Then in Part IV on the theme of technology, we have Wu Wei-wei, Liu Yexin, and Yu Bo, respectively, Associate Professor, doctoral candidate, and Dean and Professor, all of School of Management, Harbin Institute of Technology (Harbin), in Chap. (9) explaining the role of Technology Management for New Product Development. Xue Yongji, Associate Professor, and Liu Xinyi, a master student both of the School of Economics and Management, Beijing Forestry University (Beijing), in Chap. (10) explore uniquely Entrepreneurial Innovation and Performance in Forestry. Chi-hsiang, Chen of Department of Business Administration, Tamkang University, and Hsiao-yin, Chen, Assistant Professor of Kainan University, close Part IV with a chapter on Eco-Labeling, Visioning, and Integration.

In the final part, Part V, we have a series of chapters on values encompassing Chinese philosophy and leadership. Yang Cheng-Liang, Associate Professor, Department of Information Management, Tatung University (Taiwan), investigates deeply in Chap. (11) Chinese Philosophy, Values, and Culture. Chin Ta-Chia, Associate Professor, Guangdong University of Foreign Studies (Guangdong), in Chap. (13) argues for Yin-Yang Harmony for Management. Li Hai, Associate Professor, Business School, Beijing Normal University, and Zhu Jin-qiang, doctoral candidate, School of Labor and Human Resource, Renmin University (Beijing), in Chap. (14) investigate the other, darker side of leadership in Destructive Leadership, Employees' Voice, and Organization. These contributions bring Part V the book to a final closure.

1.4 Why It Concerns Management

The main reason why this book should be of concern to management is in the insights contained in each chapter. These are summarized in tabular format, bullet-style presentation for the ease of the reader. Part II is in Fig. 1.4, showing within the left column the theme of each chapter, namely, Chap. 2, Corporate Social Responsibility; Chap. 3, Corporate Governance; Chap. 4, Governance (China); and Chap. 5, Informational. Of these, Chap. 4 is the most insightful revealing the pattern of changes inside China as a complete entity, whole.

Figure 1.5 shows Part III: Risk. Within this part is the themes of each chapter in the left column. These are for Chap. 6, Finance (system); Chap. 7, Insurance; and Chap. 8, Corporate Behavior (Philanthropy).

PART II GOVERNANCE	INTEGRATED INSIGHTS
Chapter 2 Corporate Social Responsibility	<ul style="list-style-type: none"> • Impacts of corporate social responsibility (CSR) are favorable for profitability of listed corporations • CSR reporting should be mandated for listed corporations: the financial performances of these are higher than those that volunteered CSR reports
Chapter 3 Corporate Governance	<ul style="list-style-type: none"> • Chinese capital market: 4-stage model in the evolution: current fourth phase is from 2007, maturing phase • Corporate governance: transition from unilateral governance system towards game equilibrium between system and market
Chapter 4 Governance (China)	<ul style="list-style-type: none"> • Governance of China is in a transition towards polycentric or multiple centers of decision making • Modeling of polycentric governance in unity---diversity of corporate (organizational) entities across private, public and other sectors. Mapping of institutional change across provinces.
Chapter 5 Informational	<ul style="list-style-type: none"> • Fusion of accounting/non-accounting information for decision making • 3 Tiered accounting information • The theoretical framework grounded on Dempster-Shafer evidence theory

Fig. 1.4 Insights from Part II

PART III RISK	INTEGRATED INSIGHTS
Chapter 6 Finance (System)	<ul style="list-style-type: none"> • Early financial warning system incorporating two dimensions: financial distress and earnings • Corporate financial risk dissected into real finance risk and earnings risk • Tool for corporate risk assessment
Chapter 7 Insurance	<ul style="list-style-type: none"> • Inspired by earthquakes in China to develop a model for predicting consumers' decision to insure • Willingness to pay being a function of risk perception, social trust, demographics and past insurance decision
Chapter 8 Corporate Behavior (philanthropy)	<ul style="list-style-type: none"> • Post earthquake: Modeling of characteristics of corporations and their pattern of responding to disaster in making donations • Intriguingly findings are made of eleemosynary behavior: in terms of likelihood to donate, size is negatively related whilst higher net profit enhances the possibility • In terms of size of donation, again it is found total asset size to be negatively related • Most interestingly, smaller, private firms are more likely to donate and to be donating more!

Fig. 1.5 Insights from Part III

Of these chapters, it is Chap. 7 that is most intriguing: for it reflects how Chinese corporations operating within a Marxist regime respond when fellow Chinese citizens are in a crisis as during earthquakes. Remember the classic, lofty saying: “From each according to his abilities, to each according to his need.”

Insights to Part IV Technology (see Fig. 1.6) are reported in Chap. 9, New Product Development; Chap. 10, Entrepreneurship; and Chap. 11, Eco-labeled Products. These chapters are a must read for the product owner not just the manufacturer. Everybody knows China to be a global center for manufacturing. The key to winning is to own winning products. Learning from the evolving product of smartphone, owners must master the art of generating ever *new* products, that is, by products incorporating ever newer, better (eco-label) features.

PART IV TECHNOLOGY	INTEGRATED INSIGHTS
<p>Chapter 9 New Product Development</p>	<ul style="list-style-type: none"> • Utilizes system theory for integrating technology management with new product development (NPD) <ul style="list-style-type: none"> • Conceptualizing patterns of knowledge flows as part of NDP and emphasizes role of technology management for NPD • Through in-depth, empirical analyses of survey in a manufacturing corporation, the critical role of technology management in NPD is illustrated
<p>Chapter 10 Entrepreneurship</p>	<ul style="list-style-type: none"> • Intriguing: farming entrepreneurs (forestry). Conceptual models are developed: sequential decision making • Innovation and pro-activeness are related with operating performance. • Surprisingly, risk taking behavior is not found to be contribute positively to operating performance. • The mechanism of the relationships between farmers and firms are investigated as well
<p>Chapter 11 Eco-labeled Products</p>	<ul style="list-style-type: none"> • Empirically investigate (product-firm) process in eco-labeling of products on management: the key, triangulated constructs of shared vision, integration and marketing performance • Insights: shared vision do not relate with integration but with marketing performance • Integration relates with marketing performance

Fig. 1.6 Insights from Part IV

The last summary of insights is on Part V: Values (see Fig. 1.7). Here are the themes within each chapters: Chap. 12, Corporate Values; Chap. 13, I Ching (*Yi-Ching*, pin-yin); and Chap. 14, Leadership. Of all the topics within management, the most complex is in culture. Perhaps the most effective way to learn culture is to immerse oneself in the environment. China is so vast, which environment do you select? There are regional variations north-south and east-west. Other chapters (Chapters 12, 13 and 14) utilize empirical investigation for drawing insights about Chinese values.

Next is a brief note on statistical aspects of the book.

PART V VALUES	INTEGRATED INSIGHTS
Chapter 12 Corporate Values	<ul style="list-style-type: none"> • Most interesting is in empirical tests of values (Chinese philosophy; terminal and instrumental) within a Taiwanese technology enterprise • These values as constructs are then validated through factor analysis <ul style="list-style-type: none"> • Besides, prescriptions on how to sustain <i>guan-xi</i> including being reciprocal (<i>baoda</i>), long term relationship building and in giving of face (<i>mianzi</i>) to the other person
Chapter 13 I Ching (Yin-Yang)	<ul style="list-style-type: none"> • Besides the <i>Tai-Chi</i> diagram of <i>Yin-Yang</i>, for grasping Chinese mind, it is essential to know the eight trigrams • The uniqueness is in the explanation of how the eight trigrams variously contribute to perspectives on harmony <ul style="list-style-type: none"> • This is reinforced by short cases descriptions of working of <i>I Ching</i> • Understanding the 5,000 years old <i>I Ching</i> is required for anyone to appreciate Chinese culture
Chapter 14 Leadership	<ul style="list-style-type: none"> • Chinese organizations differ widely from what prevails in the US and Europe especially in voicing of employees' opinions <ul style="list-style-type: none"> • Empirical results: as expected, destructive leadership is negatively related to employees' voice behavior. More intriguingly, employees who are more conforming (Chinese tend to differ to higher authority), the negative relationship is stronger.

Fig. 1.7 Insights from Part V

1.5 Statistical Aspects

What makes this book special is the wide ranging, diverse yet high relevant topics for top management to be concerned about. This section (see Fig. 1.8) shows to the reader the rigorous nature of the efforts behind many of the chapters. For example, several authors published databases from stock exchanges, university databases (Nankai University), and China Securities and Regulatory Commission.

Chapter	Topical Focus	Technique	Data
1	Overview	Synthesis	Chapters
2	Corporate Social Responsibility	Statistical Test of Hypotheses	Published Data (Stock Exchange Database)
3	Corporate Governance	Statistical Trend Analysis	Nankai University Database
4	Governance (China)	Correlation, Factor analytic	Published Data: Census
5	Informational	Probabilistic	Concept, Assumption
6	Finance (System)	Centroid, Dimensionality	China Securities Commission
7	Insurance	Associational Analysis	Online Survey
8	Corporate Behavior (philanthropy)	Logistic Regression	Stock Exchange Data
9	New Product	Analytical, Correlative	Survey Questionnaire
10	Entrepreneurship	Regression & Contingency	Questionnaire Survey
11	Identity (Ecology)	Structural Model Analysis	Survey data at product level
12	Corporate Values	Factor Analytic	In-Company Survey
13	I Ching (Yin-Yang)	Conceptual	I Ching Tri-grams
14	Leadership	Structural Modeling	Questionnaires (Training Class)

Fig. 1.8 Comparative analysis of research techniques

Assertions made by the authors are grounded empirically through analysis of either publicly available databases or through data collected through questionnaires. For these reasons, these chapters are deserving of serious reading by those managing inside China.

1.6 Concluding Remarks

I began this chapter by referencing China’s GDP per capita with leading, economically advanced countries like the USA a global superpower and the cluster of the UK, Japan, and Germany. It is only proper that I conclude it by looking at how China had performed relative to developing economies since, say, 1990.

Clearly as shown in the abstraction of graphical line for China (see Fig. 1.9) China begins to be curving upward since 2000, and the angular bent ($a > b$) is rising far more sharply than the rest of the developing economies shown: Brazil, India,

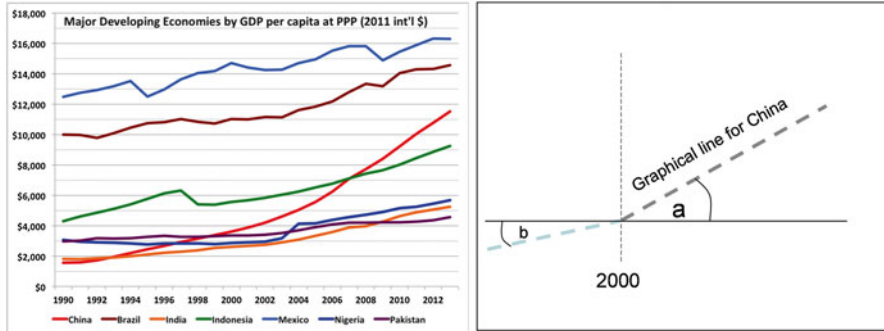


Fig. 1.9 Adapted from Wikipedia: 1990–2012 PPP (purchasing power parity)

Objectives: To update on latest studies about Chinese management

Topical Forum: Based on Diversity of Managerial Perspectives

- * Strategy for CSR Activities and Reporting in China
- * Future of Corporate Governance in China
- * Governing China: Towards a Polycentric Model?
- * Structuring an Early Financial Warning System
- * Responding Effectively in Disaster: Philanthropy Strategy
- * Coping with Destructive Leadership inside organization
- * Harmony for the Organization through the *I Ching*
- * Consumerism for Insurance for Disaster
- * Managing New Product Development

Fig. 1.10 Toward a post-MBA research-oriented, thinking workshop

Indonesia, Mexico, Nigeria, and Pakistan. In other words, in the rate of improvements of the measure of GDP per capita for China and despite her huge population base of 1.3 billion, the living standard has consistently been rising much faster than the rest of the pack.

This book here mirrors one critical aspect of changes inside China: the qualitative change and transformation of the research on management undertaken by professors working in Chinese universities. Professors in China are generating new knowledge and insights on the science of management in exactly the same way as it is done internationally. I recalled in 1990 when I wanted to embark on data collection through questionnaires (visiting CEIBS then in Beijing) inside China, I was utterly disappointed. Professors then told me that legally I cannot be collecting data on my own through questionnaires!

Now that the book is completed, the next phase has to be the dissemination of the insights gained through research. A plausible range of topics that may form the basis of a forum across universities is presented in Fig. 1.10. There is a need to look

at how to translate insights gained from research to prescriptive lessons for management. For example, our research on Managing CSR in China may form the basis of a forum discussion: Strategy for CSR Activities and Reporting in China. Or for insurance industry maybe: Consumerism for Insurance for Disaster.

China is becoming a more complex and sophisticated society simple rhetoric may suffice when the country is less developed. China is fast transforming, there is need too for deeply researched, well-thought approaches in managing the society, provinces, organizations, and corporations. Here is where professors through empirical studies may contribute.

Appendix: Participating Universities from China

1	Beijing Forestry University	北京林业大学
2	Beijing Jiaotong University	北京交通大学
3	Beijing Normal University, China Academy of Social Management	北京师范大学
4	Beijing Union University, Beijing, China	北京联合大学
5	Capital University of Economics and Business	首都经济贸易大学
6	Central South University	中南大学
7	Central University of Finance and Economics	中央财经大学
8	Changchun University of Science and Technology	长春理工大学
9	China University of Political Science and Law	中国政法大学
10	Chinese University of Hong Kong	香港中文大学
11	Chongqing University	重庆大学
12	Dalian University of Technology	大连理工大学
13	Guangdong University of Foreign Studies	广东外语外贸大学
14	Guangdong University of Technology	广东工业大学
15	Guangzhou University	广州大学
16	Hainan University	海南大学
17	Harbin Institute of Technology	哈尔滨工业大学
18	Hohai University	河海大学
19	Hunan University	湖南大学
20	Jiaying University	嘉兴学院
21	Jinan University	暨南大学
22	Kainan University	开南大学
23	Kunming University of Science and Technology	昆明理工大学
24	Nanjing Audit University	南京审计学院
25	Nanjing University	南京大学
26	Nankai University	南开大学
27	National Chengchi University	国立政治大学
28	National Chiao Tung University	国立交通大学
29	National Chung Cheng University	国立中正大学

(continued)

30	National Taiwan University of Arts	國立臺灣藝術大學
31	Renmin University of China	中国人民大学
32	Shanghai University of International Business and Economics	上海对外经贸大学
33	Shantou University	汕头大学
34	Shanxi University	山西大学
35	Shanxi University of Finance and Economics	山西财经大学
36	Shaoxing University	绍兴文理学院
37	Shenzhen University	深圳大学
38	Sichuan University	四川大学
39	South China Agricultural University	华南农业大学
40	Southeast University	东南大学
41	Southwestern University of Finance and Economics	西南财经大学
42	Sun Yat-sen University	中山大学
43	Takming University of Science and Technology	德明财经科技大学
44	Tamkang University	淡江大學
45	Tatung University	大同大學
46	The Central University of Finance and Economics	中央财经大学
47	Tianjin University	天津大学
48	Tsinghua University	清华大学
49	University of Hong Kong	香港大學
50	University of International Business and Economics, Beijing	对外经济贸易大学
51	University of Macau	澳門大學
52	University of Science and Technology	中国科学技术大学
53	University of Shanghai for Science and Technology	上海理工大学
54	Wuhan University	武汉大学
55	Xiamen University	厦门大学
56	Yancheng Institute of Technology	盐城工学院
57	Yuanpei University	元培科技大學
58	Yunnan University of Finance and Economics, Kunming	云南财经大学
59	Yunnan University of Nationalities	云南民族大学
60	Zhejiang Sci-Tech University, Hangzhou, China	浙江理工大学
61	Zhejiang University	浙江大學
62	Zhengzhou University	郑州大学

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Part II

Governance

Chapter 2

Managing CSR Inside China

Yuanhui Li and Check Teck Foo

Abstract In this chapter, the authors attempt to investigate the possible connection between corporate social responsibility (CSR) performance and corporate financial performance in China. In the process, we utilize data on corporate social responsibility performance (proxied using CSR report ratings) and corporate financial performance (proxied using ROA&ROE and Tobin's q). The overarching hypothesis may be phrased simply as: Is the company rewarded by its CSR activities from profitability perspective? The results suggest that there is significant link that indicates positive correlation between corporate social responsibility performance and corporate financial performance both in short term and long term. Most intriguingly is our finding of sharp contrast between the CSR mandatory corporations and voluntary corporations. The financial performances of corporations that are mandated (under obligation) to report on CSR activities are significantly higher than those of firms that volunteered (but not required by policy) such information. Good corporate social responsibility activities have impacts on both short- and long-term financial performances of the China firms. Corporations may achieve twin goals of earning profits and serving society. Industry executives and managers should embed CSR as part of overall corporate strategy as this will lead to improving short-term profitability and enhancing long-term competitive advantage. On the basis of our empirical finding of CSR activities to impact on profitability, we suggest a new body of thinking to be developed: there are strong financial dimensions to being socially responsible. Both investors and debt providers of companies ought to keenly emphasize good CSR practices especially in enhanced, quality reporting. Practically, it means that from a financial, fund-raising perspective, it pays for top management to emphasize a higher CSR performance.

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Keywords Corporate social responsibility • Corporate social responsibility performance • Corporate financial performance • Competitive advantage

2.1 Introduction

In the recent years, CSR (corporate social responsibility) has emerged as a corporate philosophy for integrating twin goals of profit making and being socially responsible. It is a concept whereby companies take responsibility for the impact of their activities beyond shareholders to multi-stakeholders: customers, suppliers, employees, communities, and the environment. Indeed, it is seen as a source of competitive advantage. Corporate social responsibility can be turned into a proactive business strategy. For example, CSR may be utilized as an effective marketing tool for creating and sustaining a competitive advantage (Maignan and Ferrell 2001; Drumwright 1994). Given the hypercompetitive, global markets, corporations realized to survive; they must evolve from simply “doing well” to “doing better” (Stroup et al. 1987) and to be “doing [their] best” by contributing strongly in adding societal value. To promote sustainable development of enterprises and for building a harmonious society, governments in many countries have encouraged their enterprises to disclose their CSR activities through annual reporting.

Since 2008, Chinese governmental regulatory agencies, namely, Shenzhen Stock Exchange (SZSE), Shanghai Stock Exchange (SSE), State-owned Assets Supervision and Administration Commission of the State Council (SASAC), China, and Ministry of Environmental Protection (MEP) of PRC, have issued guidelines. In China, such policy instructions when adopted by firms, enterprises, and companies often result in their reporting of social responsibility activities. Publicly listed corporations in particular are influenced by the presence of these guidelines to report on their CSR. Since December 2008, listed corporations, including Shenzhen 100 index, Shanghai governance, Shanghai overseas, and Shanghai finance, have been required (mandated) to issue CSR report together with their annual reports; others are encouraged to disclose CSR report voluntarily.

Clearly, these requirements mark a significant milestone of mandatory CSR disclosures in China among the major listed corporations. These developments lead in China to a rapid dynamic growth of CSR reports in listed companies. This may be seen in the rising trend of CSR reporting during the follow-up period of 2009–2013, as shown in Fig. 2.1.

However, senior managers in some of the listed companies have resisted: they raised the counterargument that the additional CSR activities are inconsistent with corporate efforts major responsibility of maximizing profits, a line of protest that is consistent with Milton Friedman’s monetarist school of thinking. That is, the social responsibility of any business (we may add, especially listed corporations) is to maximize profits for shareholders. This disagreement has prompted researchers to examine the relationship between CSR and corporate financial performance (CFP)

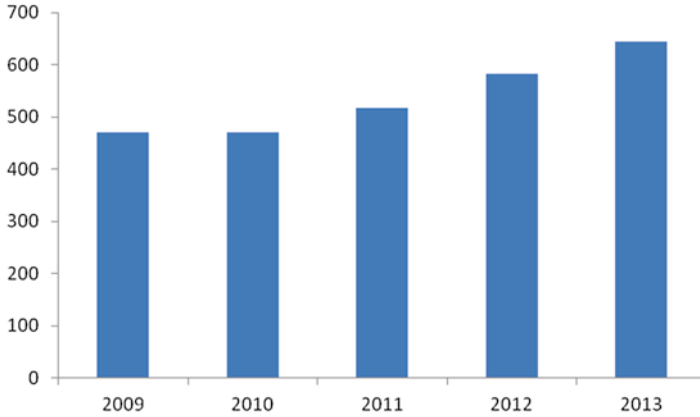


Fig. 2.1 Number of CSR reports of listed companies in China

in an effort to assess the validity of these concerns. To help shape CSR policy development in China, we decided here to investigate the following research questions:

- Whether CSR of companies has an effect on their profitability or not?
- Can corporate social responsibility of companies be integrated to become part of their competitive advantage?
- Does CSR simply drive up costs to the detriment of corporate profitability?
- What are the impacts of mandatory CSR policy (in part) for listed companies?

The remainder of this chapter proceeds as follows. The second section emphasizes the diversity of perspectives. The third section provides the conceptual overview. The fourth section explains why it concerns management. The fifth section presents our key statistical insights, and the sixth section summarizes and concludes.

2.2 Diversity of Perspectives

In embarking our study in these directions, we hope to contribute to the extant literature in several aspects. First, we seek to provide deeper insights to the relationship between corporate social responsibility performance and financial performance (as measured from short-term as well as long-term perspectives). These insights may be useful to governmental authority in formulating future CSR policies and in further refinement of guidelines.

Second, the public and investors concerned about the social responsibility by listed corporations may make better, more informed investment decisions. For example, in July 2009, Shanghai Stock Exchange released SSE social responsibility index, which has 100 composition samples selected from Shanghai governance sector according to the ranking of their CSR contribution per share.

Third, while other studies merely demonstrated the relationship between corporate social responsibility and financial performance, our approach is by far, much more insightful. We considered the contextual factors of whether CSR disclosure is mandatory or voluntary.

Fourth, we conduct our analyses in the context of China, a fast-emerging capital market within the world's largest developing market. Prior studies in this field are primarily conducted in advanced economy, where pressures for corporations to meet societal/stakeholders' expectations are arguably much stronger than emerging markets. Insights from our studies thus provide a useful contrast to the current extant literature based.

2.3 A Conceptual Overview

Researchers have investigated on the impacts of CSR on corporate profitability by focusing on the analyses of costs and benefits that resulted from the implementation of socially responsible initiatives. The key is to observe whether such initiatives have entailed economic and financial losses. Or on the contrary, such initiatives had led to realization of competitive advantages. So far, the results of empirical studies of the relationship between CSR and CFP have been inconclusive.

High CSR involvement enables firms to improve short-term profitability through reduced operational costs and/or increased revenues (Brammer and Millington 2008). Berman et al. (1999) found that corporate activity promoting employee relations has a positive effect on firm efficiency. This is because the implementation of advanced human resource practices can make firms achieve high productivity, low turnover, decreased absenteeism, and/or increased organizational commitment among employees (Berman et al. 1999). Positive consumer perceptions of product quality probably help firms to achieve increased sales, finally improving firm profitability (Waddock and Graves 1997).

Environmentally proactive firms are expected to enjoy greater profitability on account of reduced costs for abiding by environmental regulations and improvement of operational efficiencies (Russo and Fouts 1997). Corporate attention to community relations may lead to favorable tax legislation or reduced local regulations, which can allow firms to decrease their operational costs (Waddock and Graves 1997), while corporate support for women and minorities would contribute to profitability through the expansion of its market, enhanced productivity, and increased cost savings (Robinson and Dechant 1997).

Moskowitz (1972), Paret and Eilbirt (1975), and Sturdivant and Ginter (1997) found that social responsibility is positively related to an organization's stock market performance. Their findings include improved relationships with important stakeholders such as banks, investors, and government agencies. These improved relationships can increase investments in these firms by shareholders (Moussavi and Evans 1986), elevate employee morale, increase customer goodwill (Solomon and Hanson 1985), and improve relationships with government agencies that might reduce regulatory costs (McGuire et al. 1988). Sen and Bhattacharya (2001),

Backhaus et al. (2002), and Brammer and Millington (2005) found that CSR initiatives help to create heterogeneous and immobile resources, such as highly qualified job seekers, firm reputation, and consumers' positive evaluations of firms.

In turn, the creation of these intangible resources leads to investors' high expectations for a firm's future profitability, which can create high market value (Luo and Bhattacharya 2006). Brammer and Millington (2005) demonstrated that high community involvement results in greater market value. Kacperczyk (2009) indicated that corporate initiatives in the areas of the natural environment, diversity, and community relations had positive influences on long-term market-based financial performance.

A firm that attempts to decrease its implicit costs by socially irresponsible behavior, for example, in neglecting to take measures against pollution will in the end incur higher explicit costs. Socially responsible companies have less risk of negative outcomes. It is less likely for these companies to pay heavy fines for excessive pollution, to have costly lawsuits against them, or to experience socially negative events that would be destructive to their reputation. Theoretically, if there could be two identical companies, where the one is socially responsible and the other is not, it should be expected that the former would have less downside risk for value and encounter fewer events which would be detrimental to its line of profit. Since the actual costs of CSR are covered by the benefits, there is a positive linkage between CSR and corporate financial performance. Based on the above theoretical analysis, we'll make the following two assumptions:

Hypothesis 1: There is a positive correlation between corporate social responsibility performance and corporate short-term financial performance.

Hypothesis 2: There is a positive correlation between corporate social responsibility performance and corporate long-term financial performance.

Compared to developed western countries, China adopts a dual-track system on CSR information disclosures: mandatorily and voluntarily. As mentioned previously, regulators have gradually required some listed companies to disclose their independent CSR together with annual report. Since mandatory disclosure system is implemented, only a handful of companies required to do so fail to report in a timely manner. Many of those not required to report, published their CSR report voluntarily. In other words, such a mandatory requirement by authorities had a wider effect of generating corporate interest in publishing their CSR as well. According to statistics, a total of 598 listed companies disclose their independent CSR report voluntarily between 2009 and 2013.

CSR could help to improve the company's reputation and image and enhance enterprise value (Mendes-Da-Silva and de Lira Alves 2004). But compared to mandatory companies, the average CSR performance is relatively lower. So we think the mandatory companies may get a higher reputation premium. Our hypothesis 3 is as follows:

Hypothesis 3: Compared to voluntary companies, CSR performance has a bigger effect on financial performance for those mandatory ones.

After setting out our hypotheses, we will discuss the sample and methodology in the next section.

2.4 Why It Concerns Management

Now, CSR is emerging internationally as a management practice. More companies including those in China are becoming involved in the global community: for example, the established Alibaba and emerging Xiaomi. The top management of these Chinese corporations too desire to be seen as part of the global community. To be socially responsible means to be acting in a manner where one remains accountable for what is being done. And only through contributing positively to the communities where they operate can these corporations be accepted by the society. This means working closely not just with the employees but their families and the wider, local community. A fundamental principle of social responsibility is to become a responsible neighbor at least to our customers, shareholders, employees, suppliers, and network of stakeholders. CSR reporting can help stakeholders appreciate how the company is performing socially.

Nowadays in China, the pressure on firms to engage in CSR has increased. Many managers have responded positively to these pressures, but some too have resisted. As discussed earlier, those who resist typically invoke the fact that there is necessarily a trade-off between socially responsible behavior and profitability. Here, we try to unmask the link between corporate social responsibility activities and the related corporate financial performances based on data drawn from Chinese corporations. We are also investigating the overall impacts of CSR policies as initiated by government regulators. Our research should help senior management to view the implementation of CSR as an integral part of strategic planning. The goal of management should be in the short term to achieve profitability and in the long run to gain on competitive advantages.

Companies should not just focus on immediate profitability – even though we recognize that it is important for survival – but also on long-term aspect of enhancing socially their corporate value. For example, in China, people are now far more environmentally aware. Thus, Chinese customers may be far more supportive of companies that are known to be geared toward reducing pollution. So CSR reporting of listed corporations ought to matter. Through these CSR reports, enterprises in China become better known for their social contributions. It is thus conducive for Chinese enterprises and organizations to further improve the quality of their CSR reporting.

2.5 Key Statistical Insights

2.5.1 *Sample Description*

For investigating the relationship between CSR and corporate profitability, we retain in our sample only listed corporate cases (or firms). Our database is sufficiently large for us to institute controls in testing our hypotheses. This procedure yields a final sample of 2,114 observations between years 2009 and 2013, with

1,461 in the Shanghai Stock Exchange and 653 in the Shenzhen Stock Exchange. The CSR reports are obtained from the websites of Shenzhen Stock Exchange and Shanghai Stock Exchange. CSR report quality scores are gathered by hand from the website of HEXUN. Financial and stock market data are sourced from the China Stock Market and Accounting Research (CSMAR) database. The database is then set up specifically to meet our empirical research goals. This required a reworking of the variables and next we describe in detail our sample.

Table 2.1 shows the sample distribution by industry: our sample is skewed highly toward manufacturing (51.99 %) with 34.89 % represented by transportation (7.28 %), IT (6.34 %), finance (5.72 %), real estate (5.53 %), utilities (5.01 %), and mining (5.01 %), and the remaining corporations comprising of only 13.12 % are from trade (3.97 %), construction (2.74 %), conglomerates (2.65 %), travel (1.61 %), agriculture (1.32 %), and publishing and media (0.83 %). Ranking by report number, the top five industries are manufacturing (1,099), transportation (154), IT (134), finance (121), and real estate (117).

Table 2.2 summarizes the sample by year. We can find the CSR reports increasing over the years. Table 2.3 shows 71.33 % CSR report is from mandatory company's disclosure and both mandatory and voluntary company's disclosures of CSR increase by year. But voluntary companies have a relatively higher rate of growth.

Table 2.1 Total sample breakdown by industry

Industry	No.	%	CSR
Manufacturing	1,099	51.99	33.41
Transportation	154	7.28	38.53
IT	134	6.34	32.52
Finance	121	5.72	52.86
Real estate	117	5.53	29.33
Utilities	106	5.01	36.34
Mining	106	5.01	44.95
Trade	84	3.97	36.44
Construction	58	2.74	39.78
Conglomerates	56	2.65	30.12
Travel	34	1.61	34.91
Agriculture	28	1.32	33.09
Publishing and media	17	0.83	29.61
Total	2,114	100	35.54

Table 2.2 Total sample breakdown by year

Year	No.	%	CSR
2009	252	11.92	29.98
2010	352	16.65	32.64
2011	404	19.11	35.01
2012	505	23.89	36.81
2013	601	28.43	38.85
Total	2,114	100	35.54

Table 2.3 CSR sample breakdown by initiative

Year	Mandatory	%	CSR	Voluntary	%	CSR
2009	221	87.70	30.30	31	12.30	27.66
2010	269	76.43	33.86	83	23.58	28.73
2011	309	76.49	36.21	95	23.51	31.09
2012	345	68.32	37.66	160	31.68	34.98
2013	364	60.57	40.39	237	39.43	36.49
Total	1,508	71.33	36.27	606	28.67	33.73

2.5.2 Empirical Models and Variable Definitions

2.5.2.1 Corporate Social Responsibility Performance

CSR_P denotes corporate social responsibility performance. To specify our proxy for CSR performance, we utilize rankings corporate CSR reporting ratings divided by 100 for indicating CSR performance of the listed corporations. This is a measure widely utilized in China for determining CSR (Cui 2009; Shi 2010; Zhu 2011). Briefly, the system utilizes the expert scoring methodology (overall, macro 30 points, content 50, and technology 20) with the maximum obtainable score being 100.

2.5.2.2 Corporate Financial Performance

CFP denotes corporate financial performance. ROE and Tobin's q are used to measure the two dimensions of CFP: short-term profitability and long-term profitability. ROE is an accounting-based measure that represents a firm's return on equity during a given fiscal year, capturing corporate short-term profitability. ROE is measured as net income scaled by total equity at the end of each year.

Tobin's q is the ratio between a physical asset's market value and its replacement value. To measure the long-term profitability of the firm, this study uses Tobin's q to proxy it. Research shows that this ratio has considerable macroeconomic significance and usefulness as the nexus between financial markets and markets for goods and services, which can represent investors' perceptions of a firm's market value relative to its book value. It has become common practice in the finance literature to calculate Tobin's q by comparing the market value of a company's equity and liabilities with its corresponding book values as the replacement values of a company's assets that are hard to estimate.

2.5.2.3 Control Variables

There are three variables in the regression analyses to control their possible effects on the CSR&CFP link: SIZE, LEV, and GROW. Substantial research has also certified that firm size influences CFP measures significantly although there appears to

be no agreement in the direction of its effects (e.g., Hillman and Keim 2001; Kang et al. 2010; Waddock and Graves 1997). Just as the previous literature (e.g., Hillman and Keim 2001; Lee and Park 2009; Waddock and Graves 1997), we use SIZE as the natural log of annual assets. LEV represents a firm's capital structure measured by debt to asset ratio. LEV probably affects this link because high-risk-tolerant firms (firms with high leverage) may behave differently than low-risk-tolerant firms in terms of CSR investment on account of different levels of risks involved in CSR investment (Waddock and Graves 1997). According to Burke et al. (1986), as they grow, firms attract more attention from stakeholders. During different development stages (we use GROW as the growth rate of annual sales), firms tend to perform better (worse). Such correlation may confound the relationship between corporate social responsibility performance and corporate financial performance and is, therefore, controlled in the model.

2.5.3 Models

We present the following regression Eqs. 2.1 and 2.2 for analyzing the possible connection between corporate social responsibility performance and corporate financial performance.

$$ROE_{it+1} = \beta_0 + \beta_1 CSR_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 GROW_{it} + \varepsilon_{it} \quad (2.1)$$

$$\text{Tobin's } q_{it+1} = \beta_0 + \beta_1 CSR_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 GROW_{it} + \varepsilon_{it} \quad (2.2)$$

Then we present regression Eqs. 2.3 and 2.4 to investigate the effect of CSR disclosure initiative on the relation between CSR performance and corporate financial performance.

$$ROE_{it+1} = \beta_0 + \beta_1 CSR_{it} + \beta_2 INITIATIVE_{it} + \beta_3 INITIATIVE_{it} * CSR_{it} + \beta_4 SIZE_{it} + \beta_5 LEV_{it} + \beta_6 GROW_{it} + \varepsilon_{it} \quad (2.3)$$

$$\text{Tobin's } q_{it+1} = \beta_0 + \beta_1 CSR_{it} + \beta_2 INITIATIVE_{it} + \beta_3 INITIATIVE_{it} * CSR_{it} + \beta_4 SIZE_{it} + \beta_5 LEV_{it} + \beta_6 GROW_{it} + \varepsilon_{it} \quad (2.4)$$

where INITIATIVE, dummy variable, 1 indicates the company discloses their CSR report by mandatory and 0 indicates the company discloses their CSR report by voluntary.

Next, we look at the results of our analysis.

2.5.4 Descriptive Statistical Analysis

Table 2.4 provides descriptive statistics. The average ROE is 0.095 with lowest -0.047 and highest 0.235 , and the average value of Tobin's q is 1.683 with lowest 0.947 and highest 3.836 , consistent with relative research. 71.3% of sample corporations are mandated to issue their CSR report.

The corporate social responsibility performance, CSRP, is on the average 0.355 with lowest 0.117 and highest 0.84 . Clearly, this suggests that in China, there is a huge gap in terms of performance of corporate social responsibility between corporations. The mean of SIZE is 22.92 ; average LEV is 0.513 . The mean of GROW is 0.166 .

2.5.5 The Correlation Analysis

Table 2.5 provides the correlation coefficients of the variables in equations; the correlation matrix indicates that ROE and Tobin's q are positively related to CSR significantly, which is consistent with the statements above. And this reveals that firms with a higher CSR performance probably enjoy a higher financial performance. We used VIF to test for multicollinearity and found that the value of VIF is not more than 2. This suggests that potential multicollinearity is not a major concern.

Table 2.4 The main variables of the descriptive statistics

	N	Min	Max	Mean	Standard deviation
ROE	2,114	-0.047	0.235	0.095	0.072
Tobin's q	2,114	0.947	3.836	1.683	0.785
CSRP	2,114	0.117	0.840	0.355	0.131
INITIATIVE	2,114	0	1	0.713	0.452
SIZE	2,114	19.541	30.496	22.918	1.751
LEV	2,114	0.014	1.513	0.513	0.205
GROW	2,114	-0.256	0.690	0.166	0.243

Table 2.5 Sample of the correlative analysis of the relevant variables' enterprise

	ROE	Tobin's q	CSRP	SIZE	LEV	GROW
ROE	1					
Tobin's q	0.2551^{***}	1				
CSRP	0.1367^{***}	0.2224^{***}	1			
SIZE	0.1827^{***}	-0.4956^{***}	0.5530^{***}	1		
LEV	-0.0395^*	-0.4246^{***}	0.1743^{***}	0.5562^{***}	1	
GROW	0.2222^{***}	0.0054^{**}	0.0439^*	0.0773^{***}	0.0603^{***}	1

Note: *, **, and *** indicate statistical significance at 10 %, 5 %, and 1 % levels, respectively.

To control the effect of different variance on the empirical test, this paper adopts robust regression analysis using Stata 13.1.

2.5.6 Regression Analysis

For hypothesis 1 and hypothesis 2, we will examine what relationship exists between CSRP and CFP. CFP will be taken by ROE and Tobin's q in the models. Empirical regression results are shown in Table 2.6. Table 2.6 presents the regression results of Eqs. 2.1 and 2.2; the coefficients of CSRP on ROE in Eq. 2.1 are significantly positive at 1 % level, indicating the higher corporate social responsibility performance, the better short-term performance of the company has. The results are consistent with hypothesis 1, which verifies that the CSRP has a significant impact on the short-term profitability of the firms. The coefficients of CSRP on Tobin's q in Eq. 2.2 are significantly positive at 10 % level, indicating that corporate social responsibility activities can be beneficial to the long-term profitability of firms; the hypothesis 2 is also verified. SIZE has a positive relationship with ROE and negative relationship with Tobin's q , LEV shows a negative relationship with ROE and Tobin's q , and GROW shows a positive relationship with ROE and Tobin's q . Based on this discovery, it is suggested that CSR activities drive to improve not only the short-term accounting interests but also the long-term market value. CSRP-CFP relationships are kept consistent among short-term and long-term profitability measures.

Table 2.7 presents the regression results of Eqs. 2.3 and 2.4, the estimated coefficients of CSRP on ROE and Tobin's q are also positive and statistically significant at 1 % level, and the estimated coefficient of INITIATIVE is positive and statisti-

Table 2.6 Regression results of Eqs. 2.1 and 2.2

	Regression (2.1)	Regression (2.2)
Variables	Dependent variable: ROE	Dependent variable: Tobin's q
CSRP	0.039*** (2.97)	0.204* (1.71)
SIZE	0.006*** (4.29)	-0.180*** (-14.60)
LEV	-0.020** (-2.12)	-0.804*** (-7.94)
GROW	0.063*** (9.63)	0.154** (2.48)
Constant	-0.061** (-2.15)	6.120*** (25.71)
Observations	2,114	2,114
Adjust R ²	0.074	0.281

Note: T statistics in parentheses; *, **, and *** indicate statistical significance at 10 %, 5 %, and 1 % levels, respectively.

Table 2.7 Regression results of Eqs. 2.3 and 2.4

	Regression (2.3)	Regression (2.4)
Variables	Dependent variable: ROE	Dependent variable: Tobin's q
CSRP	0.043*** (3.23)	0.321*** (2.66)
INITIATIVE	0.008** (2.19)	0.202*** (5.63)
INITIATIVE *CSRP	0.0002** (2.13)	0.008*** (9.88)
SIZE	0.005*** (3.21)	-0.206*** (-15.62)
LEV	-0.020** (-2.14)	-0.802*** (-7.96)
GROW	0.063*** (9.59)	0.166** (2.71)
Constant	-0.040*** (-3.82)	6.535*** (25.92)
Observations	2,114	2,114
Adjust R ²	0.084	0.293

Note: T statistics in parentheses; *, **, and *** indicate statistical significance at 10 %, 5 %, and 1 % levels, respectively.

cally significant at 5 % level, which means that firms with mandatory CSR disclosure have significant differences in the financial performance compared to firms with voluntary CSR disclosure. The estimated coefficients of INITIATIVE *CSRP are positive and statistically significant at 5 % level, which provides the evidence that the mandatory companies get a higher reputation premium. CSR performance of mandatory companies has a bigger effect on financial performance than voluntary ones. The results support H3.

2.6 Concluding Remarks

Using China listed companies in 2009–2013 financial data, CSRP rating, and financial performance measures (short and long terms), we make multiple regressions to examine the relation between corporate social responsibility performance (CSRP) and corporate financial performance (CFP). We found through empirical tests that there is a strong positive correlation between the corporate social responsibility performance and corporate financial performance for both short and long terms. Moreover, the results revealed positive correlation between the level of CSR information disclosure and corporate profitability.

Clearly, at the current stage of development within China, good corporate social responsibility activities have impacts on both short- and long-term financial performances of the firms. This also means that good CSR reporting likely leads to enhanced, future market value of corporations. Chinese top management should seriously consider in their strategic decision-making to implement and report CSR activities. The empirical evidence provides justification for such a decision given the positive relationship between CSRP and CFP. By our empirical research, a China listed company should embed CSR as part of overall corporate strategy as this will lead to improving short-term profitability and enhancing long-term competitive advantage.

Most intriguingly, our statistical results (regression analyses) show that the financial performances of corporations that are mandated (under obligation) to report on CSR activities are significantly higher than those firms that volunteered (but not required by policy) such information. Perhaps we can even argue that such compulsion is beneficial for listed corporations, for by being compelled to improve upon CSR performances, these efforts of improvements at the same time also led to a greater rate of increase in corporate financial performance. The same may not be said for listed corporations that are volunteering CSR information.

The findings of this study have implications for practicing managers. Depending upon their individual values and beliefs, managers may choose to avoid or be engaged in socially responsible activities. What this research on CSR suggests to managers is a strong underlying economic rationale for corporate acting in socially responsible ways. Corporations may achieve twin goals of earning profits and serving society. Thus, industry executives and managers ought to incorporate CSR activities when developing their corporate strategy. Possibly, managers may embed CSR efforts as part of their investments and in so doing will help maximize returns in both the short and long terms. For example, managers may choose to invest in products that are beneficial for the community.

Since mandatory disclosures of CSR appear to benefit corporations, more firms ought to be compelled to report on the social aspects of their activities. Thus, stock exchanges in Shenzhen and Shanghai should gradually expand the scope of compulsory CSR disclosure for listed companies. From our analyses, the regulating CSR reporting by governmental authorities appears to enhance both CSR and corporate financial performances. Managers ought to continue to take initiatives in disclosing more of their social responsibility activities. In so doing, managers should improve the quality of their reports.

In conclusion, we return to where we began: conceptualization of corporate social responsibility (CSR) as embodying corporate conscience, corporate citizenship and social performance, and long-term sustainability. What our research clearly suggests is that there are strong financial dimensions to being socially responsible. Both investors (shareholders) and debt providers (bondholders) of publicly listed ought to keenly emphasize good CSR practices especially in enhanced, quality reporting. Practically, it means from a financial, fund-raising perspective that it pays for top management to emphasize a higher CSR performance.

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Chapter 3

Transformation and Institutional Change of Corporate Governance

Mian Du and Liang Gu

Abstract In this chapter the editor provides his overview of China's corporate governance institution changes with the development of capital market. Since the reform and opening up in 1970s, China economy has commenced the transformation from planned economy to market economy. The institutional change of China's listed companies is intertwined with government's external rule selection and social members' internal rule selection. On the one hand, the institutional change of corporate governance of China's listed companies results from the externally mandatory institutional arrangement of government. On the other hand, the institutional change of corporate governance of China's listed companies results from stakeholders' selection of internal rules in the premise of external rules established by government. Before the equity division reform at the end of 2006, China's listed companies adopted the equity division of state-owned shares, legal person shares and individual shares. The governance mechanism of listed companies was mainly government-oriented institutional arrangement. After the equity reform at the end of 2006, uncirculated shares were gradually traded and the market mechanism gradually played its role. The ensuing change that the listed company's shareholders, executives and external directors can trade stocks as per company's value or performance was a result of induced institutional change. Induced factors and mandatory factors have jointly advanced the reform of listed company governance mechanism.

Keywords Corporate governance • Transformation and institutional change • External rule selection • Internal rule selection

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3.1 Introduction

In *The Rise of the Western World*, Douglass C. North argues that the affluence of the Western is an original and unique phenomenon, and the key to economic growth lies in an efficient economic system whose development in the Western Europe is the root of the rise of the West. An efficient system requires institutional arrangements and the establishment of ownership, which could initiate an incentive to transfer individual economic efforts into an activity, in which the private rate of return is close to the social rate of return.

The institutional arrangement of corporate governance structure is the outcome of both the natural evolvement of Western corporate development and the application of Western separation of powers in politics to economy. However, with regard to the centralised government control in China, government has the characteristic of self-consolidation and self-expansion. It is an extremely hard nut to develop a mechanism constraining government power under such circumstances. Corporate institution and corporate governance structure were transplanted to China in succession, though their effects fell short of expectation (Gao Xinwei, *Corporate Governance in Modern China* 2009). Since China's economic transformation from planning economy to market-oriented economy in the late 1980s, the Chinese government has enacted a series of laws and regulations. Consequently, China's listed companies have undergone a serial institutional innovation and formed some institutional arrangements with Chinese characteristics.

As a competitive advantage in the global market and an important part of sustainable development, sound corporate governance mechanism plays a significant role in market order. Over the past two decades, the focus of global corporate governance research has expanded from the United States to other major developed countries including Britain, Japan and Germany. The recent years also witnessed its expansion to transitional countries and emerging economies. Meanwhile, the subject of research has stretched from theoretical research on governance structure and mechanism to the practice of governance models and principles. Much attention has been paid to the quality and environment of governance. The research focus has shifted to the evaluation and index of corporate governance. In China, corporate governance has roughly experienced the same process. Institutional development and corporate reform have undergone a unique process of institutional change. Under the trend of the full circulation of share split and shareholding of senior managers, with the promulgation and release of several regulations, including *Code of Corporate Governance in China* and *Guiding Opinions on the System of Independent Director* in 2001, *Code of Corporate Governance for Listed Companies in China* in 2002, the new editions of *Company Law* and *Securities Law* in 2005 and the *Opinions on Improving the quality of Listed Companies* of CSRC approved by the State Council in October 2005, the reform of corporate governance has stepped into a new stage.

China's corporate governance institution changes with the development of capital market. Since the reform and opening up in the 1970s, China economy has commenced the transformation from planned economy to market economy. The transformation requires an appropriate financial system. Under such circumstances, China capital market emerged to meet the demand and became the major force in

promoting economic development and resource allocation. The capital market has developed along with the increasing demand for capital market and the development of economic growth. Based on the classification in *China Capital Markets Development Report*, combining the actual situation, the development of China capital market could be roughly divided into four stages.

The first stage is from 1978 to 1992. During this period, China economic reform was launched in an all-round way. With the development of shareholding economy, the capital market started to burgeon. The second stage is from 1993 to 1998. Symbolised by the establishment of CSRC, China capital market was brought into a unified regulation and supervision, after which, a nationwide capital market started to form and develop. The third stage is from 1999 to 2007. Symbolised by the implementation of the *Securities Law*, the capital market was established legislatively and standardised with the deepening of reform. The fourth stage is up to now since 2008. With the reform and opening up as well as the development of market economy, China capital market has gradually turned to be mature (Li 2012).

As shown in Table 3.1 and Fig. 3.1, since Shanghai stock exchange was established in 1990, China's capital market system has gradually perfected from scratch. At the end of February of 2015, numbers of listed companies are from 12 in 1991 to 2,613.

As shown below in Table 3.2 and Fig. 3.2, the issuing equity of listed companies is from 551 million shares in 1991 to 4.5215 trillion shares at the end of February of 2015.

Table 3.1 Numbers of listed companies in China from 1991 to February 2015

Year	1991	1992	1993	1994	1995	1996	1997	1998	1999
Numbers of listed companies	12	49	163	263	291	478	680	780	874
Year	2000	2001	2002	2003	2004	2005	2006	2007	2008
Numbers of listed companies	1009	1084	1153	1219	1319	1332	1397	1523	1600
Year	2009	2010	2011	2012	2013	2014	2015		
Numbers of listed companies	1699	2048	2330	2486	2487	2612	2613		

The data source: Tonghuashun Financial Database



Fig. 3.1 Numbers of listed companies in China from 1991 to February 2015

Table 3.2 Issuing equity of listed companies in China from 1991 to February 2015

Year	1991	1992	1993	1994	1995	1996	1997
Issuing equity	5,508	103,333	439,107	768,682	951,237	1,316,960	2,026,859
Year	1998	1999	2000	2001	2002	2003	2004
Issuing equity	2,555,906	3,113,346	3,815,033	5,242,948	5,923,386	6,468,443	7,245,334
Year	2005	2006	2007	2008	2009	2010	2011
Issuing equity	7,764,126	15,163,03	20,815.66	23,120.31	25,086.20	33,368.74	36,796.13
Year	2012	2013	2014	2015			
Issuing equity	39,143.27	41,543.61	45,159.17	45,215.18			

The calculating unit: 100 million shares; the data source: Tonghuashun Financial Database

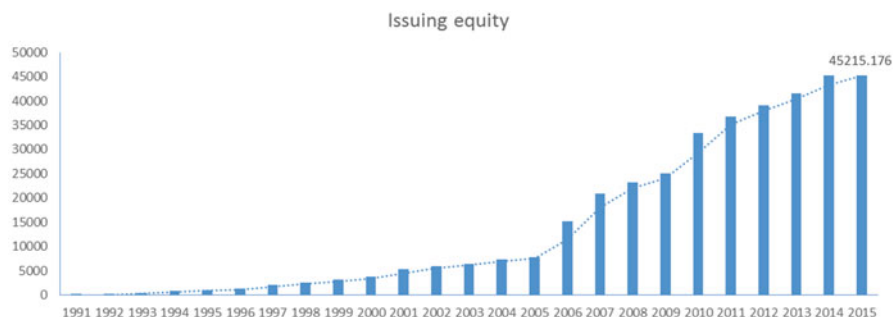


Fig. 3.2 Issuing equity of listed companies in China from 1991 to February 2015

Table 3.3 Total market value of listed companies in China from 1991 to February 2015

Year	1991	1992	1993	1994	1995	1996
Market value	596.32	907.475	3115.256	3418.021	3246.193	8853.788
Year	1997	1998	1999	2000	2001	2002
Market value	16,266.85	17,740.83	24,345	44,637.95	40,796.24	36,186.37
Year	2003	2004	2005	2006	2007	2008
Market value	39,956.8	35,065.01	30,701.05	87,669.94	326,100.1	121,176.1
Year	2009	2010	2011	2012	2013	2014
Market value	241,374.7	262,843	213,515.5	229,385	238,870.6	373,230.5
Year	2015					
Market value	387,524.7					

The calculating unit: 100 million yuan; the data source: Tonghuashun Financial Database

As shown below in Table 3.3 and Fig. 3.3, China's capital market development speed is very rapid, the total market value of listed companies in China has grown from 59.63 billion in 1991 to 38.75 trillion yuan in February of 2015.

Corporate governance, involved with shareholders, board of directors, executives and stakeholders, is an institutional arrangement of relevant stakeholders in corporate ownership right, control right and residual claims right. In the real world, people maximally pursue self-interests under certain restrictions of the existing organisation structure. Meanwhile, people have limited ability to obtain and process information, which is *bounded rationality*. Therefore, people have opportunistic motivation. They may hide their preference, distort data or confound right and wrong. In the words of Williamson, there is deceitfully pursuit for self-interests. Parties and arbitrators in contract are unable to attest or observe everything. Thus, contract terms and clauses are incomplete as a result of asymmetry of information between two parties who conclude a contract, incompleteness of a contract, bounded rationality in people's cognition and opportunism in motivation as well as complexity and uncertainties of external environment. Consequently, corporate governance

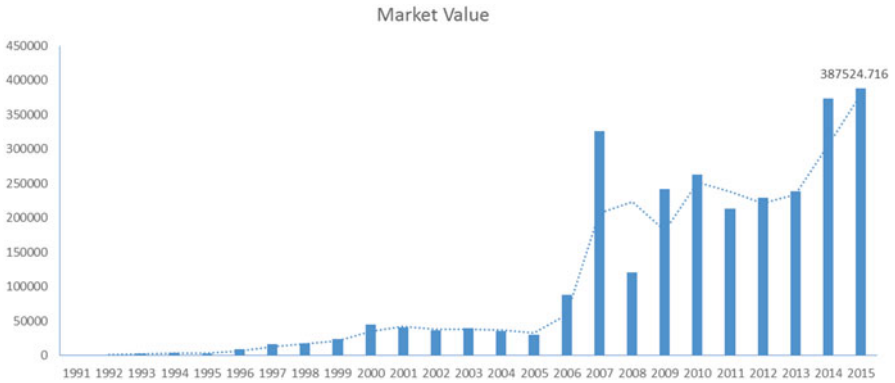


Fig. 3.3 Total market value of listed companies in China from 1991 to February 2015

is how companies constitute different mechanisms such as supervisory and incentive mechanisms to deal with problems brought by incomplete contracting to guarantee investors' interests.

One of the important tasks of corporate governance research is to establish a scientific operation system of corporate governance. The systematic operation, on the one hand, provides investors with investment information. On the other hand, the operation system could help investors master the status quo of corporate governance, observe and analyse the situation and issues arising from protecting the rights and interests of stakeholders, corporate governance structure as well as governance mechanism construction. All of these would help to improve corporate governance quality and corporate value. As far as corporate governance is concerned, it is urgently needed to understand the following questions for both theoretical and practical personnel: How is the quality of corporate governance in China? What could be done to regulate the general meeting of shareholders and ensure company independence? How does the board of directors run so as to form a mature decision-making and supervision mechanism? What kinds of incentive and constraint mechanisms can be adopted to reduce agent cost and encourage the agents to work hard for a company's long-term development? What are the main factors determining the quality of corporate governance? What are the risks of corporate governance, and what are the impacts on investors and other stakeholders? How will the establishment and perfection of corporate governance mechanism affect corporate performance?

Corporate governance is a worldwide issue and also one of the most eye-catching research fields of economics and finance in recent decades. Broad discussion has been made in British and American countries in recent decades on how to conduct corporate governance to improve the performance of companies and whole economies. In particular, the occurrence of scandals in large-scale companies since 2002 has attracted highly attention of governments, enterprises and the academia. European, Asian and other countries have been paying more and more attention to

corporate governance. Developing countries are attaching more and more importance to corporate governance. Therefore, corporate governance is a worldwide research topic.

Long-term survey and examination of corporate system's validity is the core to secure enterprise's international competence. The United States is recognised as a country with sound legal system and external market mechanism. However, since 2008 global financial crisis after US Enron Corp.'s financial fraud, five largest US investment banks have been exposed to troubles in succession: the collapse of Lehman Brothers, the takeover of Merrill and Bell Sten and fraud cases of Goldman and Morgan which were filed lawsuits or investigated by the US Securities and Exchange Committee. The study on corporate governance in China started from the late 1980s and much importance has been attached to it with the reform of state-owned enterprises (SOEs). Although China's *Corporate Law* was put into effect in 1994, corporate fraud cases occurred incessantly, such as the Yi'an Science and Technology Co. Ltd. event, China Venture Capital Co. Ltd. event, Yinguangxia Co. Ltd. event, Lantian Co. Ltd. event, Dongfang Electronics Co. Ltd. event and Delong Co. Ltd. event. Numerous corporate scandals made corporate governance remain an unprecedented close concern. Such cases fully exemplify that internal and external corporate governance mechanism is a worldwide topic and the study on it is far from being ended. There is still a long way to go. In face of global financial turmoil, sharp rise and fall of commodity market, fluctuations of exchange rate and uncertain environment of quantitative easing policy and inflation, the major problems confronted with China's corporate governance at present stage is how to examine organisational environment comprehensively, how to penetrate the features of institutional transition and how to explore the innovative paths of corporate governance with Chinese characteristics, which are the requirements of innovative corporate governance theory.

After more than three decades' transformation and reform, China's economic system mainly features emerging and transitional characteristics of the times. When it comes to corporate governance, it is mainly characterised by the transition from unilateral governance system arrangement to the game equilibrium governance between system and market. It is not only represented by the fast changing of corporate governance characteristics, but also by the great changes of governance environment that has occurred and will occur. Corporate governance structure affects enterprises' capital cost, market value, enterprise strategy, product market competence and overall economic growth and stability.

The reform of SOEs in China started in 1978 and has lasted for nearly 36 years. The reform of SOEs is both the mainline of China's economic system reform and the epitome of the whole economic system reform. Since China's first joint-stock company was established and issued stock in 1986, China's enterprise institutional reform has promoted the institutional change from two aspects of mandatory factors and induced factors. It is of great significance to observe and study the mechanism transition of corporate governance of China's listed companies for understanding and improving the quality of corporate governance and securing the international competence of China's enterprises. Douglass C. North, a Nobel Prize winner in

Economics, pointed out clearly at the beginning of his book *Institutions, Institutional Change and Economic Performance* that institution was a game rule for society or, more formally speaking, a man-made designed restriction shaping people's interaction. Institution constitutes the incentives for exchange in political, social or economic fields, while institutional change determines the mode of social evolution in human history. Institution has undeniable impact on economic performance.

The institutional change of corporate governance of China's listed companies, as Lin (1994) pointed out, includes two types: induced and mandatory institutional changes. Induced institutional change refers to the change or substitution of existing institutional arrangement or the creation of a new institutional arrangement, which is spontaneously advocated, organised and implemented in response to profit opportunities by a person or a group. On the contrary, mandatory institutional change is introduced and implemented by government commands and laws. Induced institutional change must be caused by an unobtainable profit opportunity under the existing institutional arrangement. In real economic reform, each institutional change is always caused by the joint efforts of both induced and mandatory factors. Essentially, induced and mandatory factors jointly contribute to the process of institutional change.

North believed the induced factor of institutional change was that economic body coveted through institutional innovation to maximally achieve unobtainable potential profits in existing institutional arrangement. Studying on institutional change is conducted from two aspects. One is the so-called government-oriented theory in which institutional change is realised by new institution arrangement of government. The other is the so-called transaction view in which institutional change is the spontaneously engaged institutional innovation of the parties in economic activities in the face of profit opportunities. Noticeably, both views adopt the institutional change analysis framework of Lin (1994) on mandatory and induced institutional changes at the early period (Zhou 2000).

On the one hand, the institutional change of corporate governance of China's listed companies results from the externally mandatory institutional arrangement of government. Before 1992, there were no specified laws or regulations on corporate governance mechanism of China's listed companies. The governance mechanism of listed companies was in exploratory period. In May 1992, the State Commission for Restructuring Economic System promulgated the *Opinions on Standards for the Companies Limited by Shares* which was China's first regulatory document on companies limited by shares. It symbolised Chinese listed companies' corporate governance structure stepping into standardised process. In July 1994, the *Company Law* was officially implemented, which comprehensively standardised corporate governance structure. On July 1, 1999, the *Securities Law* was enacted. Within the framework of the *Company Law* and the *Securities Law*, government promoted the preliminary formation of listed companies' internal governance mechanism and market-based external governance mechanism. Firstly, corporate governance institution had been gradually improved. A series of normative documents had been promulgated in succession. *Guidance on the Establishment of Independent Director System in Listed Company* and *Guideline on Corporate Governance of Listed*

Company were promulgated in 2001 and 2002, respectively. After that, a series of regulations covering the *System of Three Boards*, independent directors, related transactions, financial transactions and foreign guaranty as well as investor protection etc. were enacted, which preliminarily built up the framework for corporate governance of listed companies. Secondly, equity division reform was advanced, which resolved the long-term leftover problems in history constraining China's capital market development. Thirdly, information disclosure system was promoted to carry out the accounting system gradually converging international financial reporting standards.

On the other hand, the institutional change of corporate governance of China's listed companies results from stakeholders' selection of internal rules in the premise of external rules established by government. Before the equity division reform at the end of 2006, China's listed companies adopted the equity division of state-owned shares, legal person shares and individual shares. On average, two thirds shares were not allowed in circulation. The governance mechanism of listed companies was mainly government-oriented institutional arrangement and the capital market mechanism was not sound. After the equity reform at the end of 2006, uncirculated shares were gradually traded and the market mechanism gradually played its role. The ensuing change that the listed company's shareholders, executives and external directors can trade stocks as per company's value or performance was a result of induced institutional change. The governance mechanism that China listed companies' large shareholders and executives holding shares and external directors' salary system was a result of institutional arrangement and also the result of dynamic equilibrium between large shareholders and executives' competitive selection when seeking to maximise corporate value. In a word, the institutional change was a result of both institutional arrangement and market selection among shareholders, directors and executives for the sake of their own interests (Du 2014).

By comparing with the overall corporate governance situation of China's listed companies across consecutive years, a positive trend is evident. The overall governance level is on the rise, though an inflection point appears in 2009, with the average lower than 2008 level but higher than all the other previous years. Also, starting from 2010, the corporate governance average is higher than 57.68 in 2008 and rises gradually year after year, as you can see in Fig. 3.4. Please see the comparison of the total index of corporate governance in Table 3.4.

Among these subindices, the value of the CCGI^{NK} is 62.89 in 2013 – up by 1.69 points since 2012 (61.20). Notably, the BOD corporate governance index has risen gradually year after year. As the core of corporate governance, strong improvement in the BOD (rising to 61.74 in 2013 after exceeding 60 in 2010 for the first time) are significant. The new *Corporate Law* has strengthened the function and power of the BOD and the BoS. Corporate governance has improved obviously, rising from 54.84 in 2008 to 55.97 in 2009 and then from 56.17 in 2010 to 57.17 in 2011 and then finally from 57.35 in 2012 to 57.38 in 2013. Manager-level corporate governance has also shown a steady trend, with the information disclosure averages being 57.40, 55.53, 57.21, 57.81, 57.27 and 57.21 from 2008 to 2013, respectively. After experiencing the inflection point in 2010, the status of information disclosure has

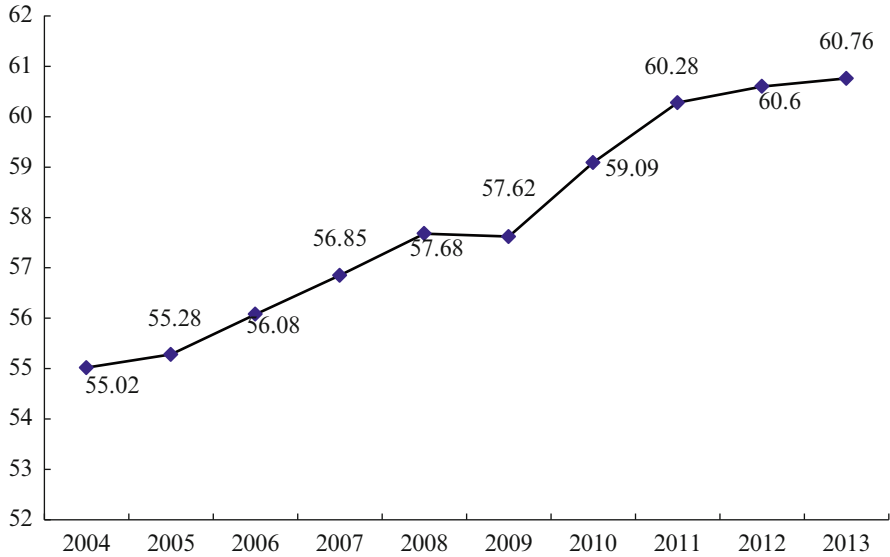


Fig. 3.4 Corporate governance index trend analysis (Material source: Corporate Governance Database of Nankai University)

Table 3.4 Corporate governance index comparisons, 2004–2013

Year	Corporate governance index	Shareholders' governance index	BOD governance index	BoS governance index	Management level governance index	Information disclosure index	Stakeholders' governance index
2004	55.02	56.47	52.60	50.48	54.60	62.20	51.12
2005	55.28	56.10	53.15	51.75	54.80	62.25	50.95
2006	56.08	56.57	55.35	50.93	55.22	62.76	52.61
2007	56.85	57.32	55.67	52.93	57.88	61.66	53.08
2008	57.68	59.23	57.88	55.97	55.53	61.85	52.94
2009	57.62	58.06	57.43	54.84	57.40	62.36	53.43
2010	59.09	59.81	60.33	56.17	57.21	63.43	54.83
2011	60.28	64.56	60.81	57.17	57.81	63.02	56.47
2012	60.60	61.20	61.21	57.35	57.27	63.14	63.22
2013	60.76	62.89	61.74	57.38	57.21	63.18	61.46

Material source: Corporate Governance Database of Nankai University

risen: its average reaches 63.18 in 2013 (the highest in the six subindices). The stakeholder issue has gradually attracted attention from listed companies and risen steadily, especially since 2010. Though the 2013 index average has slightly decreased compared with the 2012 average, the values are stable.

The institutional change of China's listed companies is intertwined with government's external rule selection and social members' internal rule selection. It seems

that external rule is the mainline, but actually, it is internal rule. The conflict and coordination between external and internal rules exist throughout the process of institution change. The reform of China's listed companies has both the institutional innovation process of government and other organisations seeking for favourable external rules and the spontaneously engaged innovation process of social members seeking for appropriate internal rules. Seemingly, external rules cover the whole content of institutional change. However, a great many cases and empirical research prove that it is the spontaneous evolution of internal rules that actually covers the whole content of institutional change (Zhou Ye'an 2000).

Induced factors and mandatory factors have jointly advanced the reform of listed company governance mechanism, which is also a repeated game process of large shareholders, executives and government. The new institutional arrangement formed at every stage of reform can be regarded as a temporary game equilibrium. Newly established institutions will create a new pattern of interests and thus alter the strategic arrangement of game bodies. The characteristics of SOE reform at different stages are represented by the evolution of equilibrium from one to another (Cheng et al. 2005).

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Chapter 4

Emerging Polycentric Pattern in Governing Transitional China

Xin Zhang

Abstract Given the context of globalization which is hollowing out the sovereignty of nation-states through unraveling the central state, every nation-state has to restructure its governance systems to cope with the challenges and opportunities thereof. This chapter focuses on how China has modernized its systems and capabilities of governance through the perspective of a theoretical framework of the constitutional trinity of political state, market economy, and civil society in terms of polycentric governance. Specifically, polycentric governance means the separation and combination of corporate entities across public, private, and third sectors to form the unity and diversity of the ecological systems of governance. China in transition from a totalitarian regime lies in its corporatization rather than privatization with the Pareto-improved strategy of reforming public sector and having private and third sectors boomed. The incremental policy of reforming and opening up takes on institutional isomorphism across regions in terms of the distribution of diverse corporate entities based on the census data. A factor analysis as a decoupling method is thus applied to result in the emerging three clusters of corporate entities or the emerging polycentric pattern of governance, i.e., the cluster of enterprises, the cluster of governments and communities, and the cluster of associations and nonprofit organizations. No doubt, the emerging three clusters represent the three dimensions of institutional change from a totalitarian regime toward a market economy, a political state, and a civil society in contemporary China, which presages modernization of the systems and capabilities of governance under the rule of law.

Keywords Polycentric governance • New institutionalism • Constitutional trinity • Corporate entity • Political state • Market economy • Civil society • Institutional isomorphism • Rule of law • Sovereignty • Globalization • Rules spectrum

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4.1 Introduction

We are all in the age of globalization, and the sovereignty of nation-states has been hollowed out through the reallocation of authority upward to international organizations such as the World Trade Organization, the International Monetary Fund, and the World Health Organization, downward to localities and communities, and sideways to the private and third sectors (Hooghe and Marks 2003). The “hollowing out of the state” thesis leads to the reinventing government movements worldwide since the early 1990s (Rhodes 1994). The essential strategies of reinventing government are economic privatization, administrative decentralization, and political devolution (Osborne and Gaebler 1992). Reinventing government to a great extent signifies a paradigm shift from government to governance. Governance simply indicates the process of governing with or without government (Rosenau et al. 1992; Rhodes 1996), representing the networked ecological patterns of autonomous entities across public, private, and third sectors.

The genealogy of governance in contemporary China started with the study of civil society in the context of new authoritarianism for modernization (Xiao 2012), an alternative approach to political reforms (Li 2014). Deng and Jing (1992) argued for constructing a Chinese civil society that is a private realm on the one hand based on contractual principles where citizens can take economic and social actions spontaneously and voluntarily and on the other hand a public realm where citizens can take part in politics. Just as the World Bank (1989, 1992) used the term of governance to avoid the potential conflict of political ideologies with the term of government, Chinese scholars embrace the term of governance to argue how to rule the country and how to conduct institutional reforms for economic development by introducing experiences of governance in Western developed countries (Liu and He 1995; Mao et al. 1998). It was Keping Yu from the Central Compilation and Translation Bureau, a think tank for Chinese central government, who to some extent had the idea of governance going into the official public discourse of Chinese government (Yu 2001, 2008).

China has been in transition from a command economy to a market economy, from a rural society to a civil society, and from a totalitarian state to a political state (*Rechtsstaat*) since the late 1970s. To address the governance of transitional China, a general methodological strategy is to decompose the large composite systems of interacting constituents into component systems without interaction through a decoupling method in light of complex-system theories (Auyang 1999). Governing systems and capacities in transitional China are treated as many-body systems, in which political state (public sector), market economy (private sector), and civil society (third sector) as three categorical legal persons are constitutionally separated and combined to form nine ideal types of corporate entities, based on the principal-agent theory of property rights. It is hypothesized that all the types of corporate entities in the real world are derived from alternative partnerships between nine ideal types of the three categorical legal persons above. In other words, the unity and diversity of corporate entities in terms of ecological systems reflect the constitutional trinity as the three-body systems of the state, the economy, and the society.

The Third Plenary Session of the 18th National Congress of the CPC (Communist Party of China) in 2013 put forth modernization of the country's governing systems and capacities, which is scholarly and practically regarded as a complex systems engineering approach (Xi 2014). Given the political, economic, and social transformation of contemporary China driven by the reform and opening-up policy in the context of globalization, the successful transitions however need to harmonize institutionally the mutual trilateral relationships among the state, the economy, and the society for the sake of good governance with the underpinnings of the rule of law and self-governance. Drawing on the theories of new institutionalism in political science, economics, and sociology, this chapter provides a theoretical framework of polycentric governance to explain how to govern transitional China, and then the census data of corporate entities in China are analyzed through exploratory factor analysis as a decoupling method to substantiate the emergence of polycentric governance.

4.2 Diversity of Perspectives

The words "government" and "governance" come from the word "govern" in terminology with the meaning of "steer," "control," "guide," or "manipulate." Specifically, to govern means to exercise continuous sovereign authority over citizens or to rule without sovereign power. The words "government" and "governance" had been used interchangeably until the late 1980s. The popularity of the word "governance" or the replacement of the word "government" by the word "governance" in development policy to some extent attributes to the World Bank, who initially put forth the concept of governance factor in economic development, i.e., political legitimacy and the consensus for action are the precondition for sustainable development (World Bank 1989, 1992; Jessop 1998). In contrast, the word "government" means governmental bureaucratic organizations of nation-states with the legitimate monopoly of coercive power to set up formal rules, maintain societal order, and regulate collective actions (Stoker 1998).

Given the emerging role of civil-society organizations in economic development (Ostrom 1990; Putnam 1994), the word "governance" has been widely used instead of the word "government" to accommodate informal collective actions and formal collective actions, for civil society is related to informal collective actions and the state is related to formal collective actions. Governance is the process of interaction among various actors to form the self-organizing networks in kinds, and thus, its legitimacy comes not from the external coercion of the state but from the internal consensus of stakeholders (Kooiman 2003; Bevir 2011). Specifically, governance is better understood as the: (1) minimum state, which means limited government and more participation of private and third sectors in public service; (2) corporate governance, a system to control and guide a corporate entity; (3) new public management, applying entrepreneurial spirit to transform public sector; (4) good government, defending constitutional values of the rule of law, democracy, and liberty; and (5) self-organizing networks among organizations beyond markets and hierarchies (Rhodes 1996).

Do networks matter? To understand governance is to apprehend networks (Rhodes 1997). All network-based studies assume that the characteristics of network structure affect policy processes and outcomes (Marsh and Smith 2001). There is a spectrum of network structure composed of policy subsystems, i.e., specific configurations of policy actors as membership and modes of interaction thereof, in which policy community is related to the tight structure of policy subsystems, and issue network is related to the loose structure of policy subsystems. Policy subsystems were conceptually developed from the observation that American federal interest groups, congressional committees, and government agencies had formed the so-called “iron triangles” of mutual support over legislative and regulatory matters. They were often condemned for having “captured” the policy process for specific interests, but it was the first study to disclose a significant relationship between subsystem structure and policy change. Iron triangle-type subsystems were later found not omnipresent, and policy subsystems varied across issues and over time. Policy network studies need to go beyond thick description and classification (Dowding 1995) and demonstrate that structural aspects of political life actually have a predictable effect on policy outcomes (Howlett 2002).

Just as policy network studies focus on the governance in terms of the complex interplay of policy actors and institutions, new forms of governance have been derived from unraveling the central state in the context of the coexistence of globalization and localization or fragmentation and integration (Rosenau 1997). Modern governance is and should be dispersed across multiple centers of authority, and multilevel governance is studied being organized by two types of institutional arrangements (Hooghe and Marks 2003). Accordingly, Type I is characterized with nested institutional arrangements of general-purpose jurisdictions, nonintersecting memberships, jurisdictions at a limited number of levels, and system-wide architecture. And Type II is characterized with non-nested institutional arrangements of task-specific jurisdictions, intersecting memberships, no limit to the number of jurisdictional levels, and flexible design. Non-nested institutional arrangements are generally embedded in nested institutional arrangements, but the ways they work vary.

Governance is related not only to institutional arrangements but also to public economies. Goods and services are classified into four types in terms of rivalry and excludability, which are private goods and services with rival and excludable attributes, club goods and services with non-rival and excludable attributes, common goods and services with rival and non-excludable, and public goods and services with non-rival and non-excludable attributes (Ostrom and Ostrom 1977). Public economies refer to the alternative delivery of club goods and services, common goods and services, and public goods and services. The new public governance as a paradigm argues for the joint delivery across public, private, and third sectors for public economies (Osborne 2009). Different from the new public management focusing on intraorganizational efficiency gains, the new public governance emphasizes interorganizational efficiency gains ruled by the economics of scale and scope and the coproduction of users and providers in the industrial organization of public economies.

It is time to synthesize the diverse perspectives on governance with the concept of polycentricity, a term that Vincent Ostrom introduced in a classic article in 1961 to articulate how to govern metropolitan areas, which stated that

“Polycentric” connotes many centers of decision-making which are formally independent of each other.... To the extent that they take each other into account in competitive relationships, enter into various contractual and cooperative undertakings or have recourse to central mechanisms to resolve conflicts, the various political jurisdictions in a metropolitan area may function in a coherent manner with consistent and predictable patterns of interacting behavior. (Ostrom et al. 1961: 831)

Polycentric governance requires a complex combination of multiple levels and diverse types of organizations across public, private, and third sectors with fragmented and overlapped realms of responsibility and functional capacities (McGinnis and Ostrom 2011). A polycentric system of governance is more than a federal system of governments which may consist solely of nested jurisdictions at the local, state or provincial, and national levels, including intersecting jurisdictions for specific policy matters. In other words, polycentric governance is analogous to ecological systems of corporate entities with the mosaic patterns of institutional arrangements, nested and non-nested.

4.3 A Theoretical Framework

As the Berlin Wall fell and market economy eventually prevailed in the late twentieth century, these seem to augur Francis Fukuyama’s proposal of the advent of Western liberal democracy (Fukuyama 1992). Unlike free market fundamentalists under the rubric of the Washington Consensus, the Third Way scholars bring civil society back into the debate between the Old Left (pro-state and anti-market) and the Old Right (pro-market and anti-state) and argued for a new mixed economy of government, market, and civil society (Giddens 1998, 2000). Just as Antonio Gramsci (1992) argued for equality between the state (government), the economy (market), and civil society, Robert Putnam (1994) argued that a strong society in terms of civic associations is the underpinnings for both a strong democratic state and a strong market economy. In a similar fashion, Elinor Ostrom (1990, 2010) proved that civil society in terms of local communities is legitimately extended beyond states and markets, and Oliver Williamson (1996) distinguished three mechanisms of governance in terms of the economy of transaction costs, i.e., markets, hierarchies, and the mixed.

Given state unilateralism and market fundamentalism for the last 30 years, Michael Burawoy (2005) argued that civil society has been “colonized and co-opted” by states and markets, and sociology should stand out to defend the interests of humanity, just as he expounded that economics depends on the market and its expansion, political science depends on the state and the guarantee of political stability, and sociology depends on civil society and the expansion of the social. Apparently, there is the emerging trichotomy of the state, the economy, and the

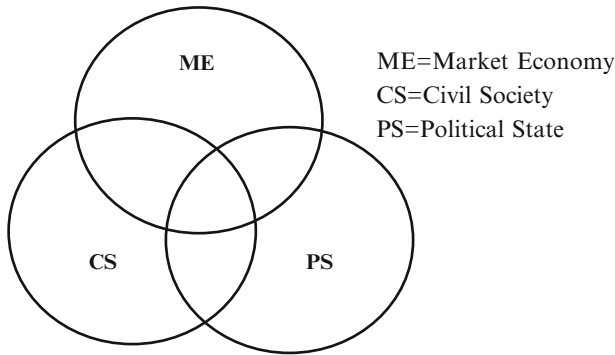


Fig. 4.1 The constitutional state-economy-society trinity

society in theory and practice (Martinussen 1997; Triglilia 2002; Urio 2011; Rosen and Gries 2011), which suggests a constitutional trinity of the state, the economy, and the society with respect to a commonwealth (see Fig. 4.1). A market economy is arguably embedded in civil society and political state (Granvovetter 1985; Evans 1995; Polanyi 2001), given the spectrum of rules from informal to formal (North 1990). Civil society corresponds to informal rules in terms of habits and norms, political state to formal rules in terms of laws and constitutions, and market economy to mixed rules in terms of property rights.

It needs to reexamine the sovereignty of nation-states in the age of globalization (Shinoda 2000). Thomas Hobbes argued that political order should be under the unity of a sovereign representative (Leviathan), a mortal god who serves under the immortal God (Martinich 1992). A moral sovereign is thus derived to be the necessary condition for the political order of a stable and peaceful commonwealth. Just as all power tends to corrupt and absolute power corrupts absolutely (Dalberg-Acton 1949), the state power should be constitutionally limited for the sake of liberty, to which a federal theology approach suggests a compound republic. The word “federal” is derived from *foedus*, the Latin word for covenant. The Hebrew word for covenant is *brit*, meaning to divide and then bind together. “A covenant,” Daniel Elazar writes, “differs from a compact in that its morally-binding dimension takes precedence over its legal dimension. In its heart of hearts, a covenant is an agreement in which a higher moral force, traditionally God, is either a direct party to, or guarantor of a particular relationship” (Elazar 1995: 31).

Covenants based on voluntary consent can bind any number of partners with independent status for a variety of purposes, under conditions of mutual respect which protect the individual integrities of all parties. To safeguard federal liberty, Johannes Althusius ([1603]1997) argued first for a compound polity structuring of the body politic into five symbiotic consociations as ideal types of covenantal relationship: two private consociations of the family and the collegiums and three public consociations of the city, the province, and the commonwealth. Three public consociations are nested institutional arrangements with respect to territories, and the private consociations of the collegiums are regarded as voluntary associations of civil society today. Moreover, unlike Jean Bodin who argued for the indivisible of

sovereignty, Althusius regarded sovereignty as constitutive power to be shared by citizens, i.e., a concept of popular sovereignty. In paraphrasing, Vincent Ostrom (1973) argued that a necessary condition for federalism to exist is a system of concurrent regimes with overlapping jurisdictions. And he elucidated further that constitutional choice need not be limited to national government but can apply to all institutions of human governance.

The state, the economy, and the society as three categorical legal persons are constitutionally ordered for checks and balances of each other while sharing the sovereignty of a commonwealth. The constitutional trinity of the state, the economy, and the society represents the polycentric pattern of governance at the meso-level where the state-centered governance, the market-centered governance, and the society-centered governance are institutionally fragmented and overlapped, according to a matrix theory of federalism in terms of self-rules and shared rules (Elazar 1987). Metaphorically, alternative corporate entities across the state (public sector), the economy (private sector), and the society (third sector) are statistically distributed along the spectrum of rules from informal to formal via mixed in terms of tri-variate normal distribution (see Fig. 4.2).

Alternative corporate entities are formed from the separation and combination of public, private, and third sectors as three categorical legal persons on the basis of the principal-agent theory of property rights (see Fig. 4.3). It was James Coleman who explained the notion of corporate actor through the construction of a systematic theory of corporate action. He stated that, “A natural person encompasses two selves, objective self and acting self, or principal and agent, in one physical corpus. A minimal corporate actor is created when principal and agent are different persons” (Coleman 1994: 421). Just as the law of agency involves a person (the agent) who is authorized to act on behalf of another (the principal) to create a legal relationship with a third party, the principal-agent relationships of public, private, and third sectors are all formed with respect to citizenry as the third party.

There are nine formed ideal types of corporate entities, which are the first type of a public sector principal with a public sector agent such as governments, the second type of a public sector principal with a private sector agent such as the state-owned enterprises (SOEs), the third type of a public sector principal with a third-sector agent such as governmental nonprofit organizations (NPOs), the fourth type of a private sector principal with a public sector agent such as natural monopolies, the

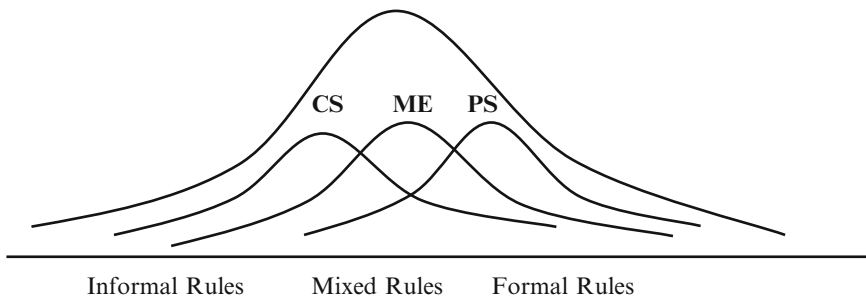


Fig. 4.2 A constitutional framework of the rules spectrum (Source: Adapted from Zhang 2005: 202)

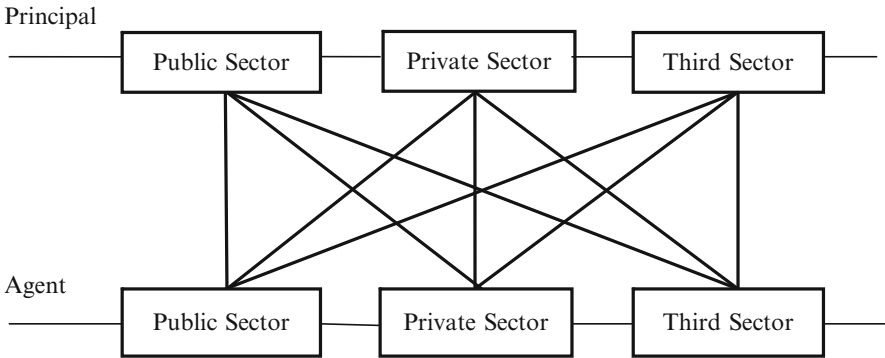


Fig. 4.3 The formation of polycentric governance

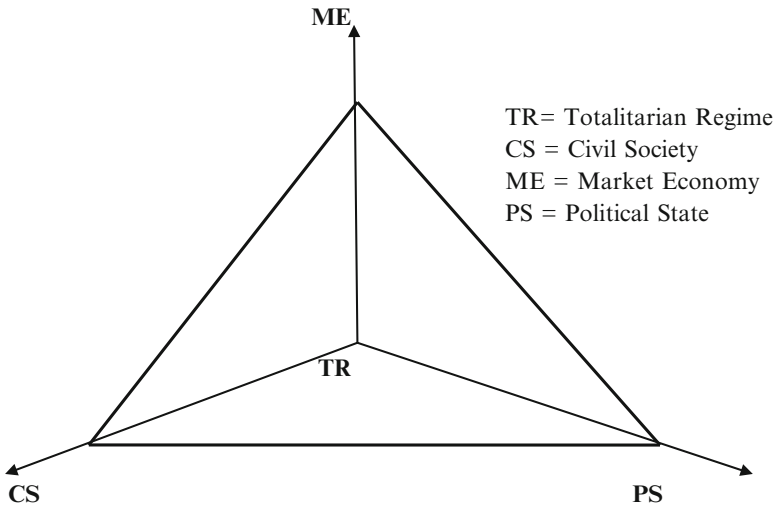


Fig. 4.4 A transition model from a totalitarian regime

fifth type of a private sector principal with a private sector agent such as private enterprises, the sixth type of a private sector principal with a third-sector agent such as social enterprises, the seventh type of a third-sector principal with a public sector agent such as communities, the eighth type of a third-sector principal with a private sector agent such as nongovernmental NPOs, and the ninth type of a third-sector principal with a third-sector agent such as voluntary civic associations.

Applicably, a totalitarian regime means that the state controls all aspects of the economy and the society wherever possible, and there are no checks and balances between the state, the economy, and the society. The People’s Republic of China was a totalitarian regime before reform and opening up in the late 1970s. Since then China has been in transition politically, economically, and socially. A transition model from the totalitarian regime is provided to explain the emergence of polycentric governance in contemporary China (see Fig. 4.4). Specifically, the origin point

denotes a totalitarian regime in which the state, the economy, and the society are unified as one, and the three dimensions of institutional diversification indicate the directions of the transitions, respectively, to a market economy, a civil society, and a political state (*Rechtsstaat*). Thus, the formed triangle represents the constitutional trinity of the state, the economy, and the society, i.e., the polycentric pattern of governance.

4.4 Why It Concerns Management

The idea of polycentric governance helps managers better understand the institutional transitions of China from a totalitarian regime in the context of globalization characterized with the hollowing out of the central state. In 1978, the Third Plenary Session of the 11th National Congress of the CPC emphasized replacing class struggle with economic development as the key link. China has been in transition since then. The reform and opening-up policy started in rural areas with the family-based contractual scheme. The increased agricultural productivity demonstrates that the incentive system for farmers works (Lin 1992). In the mid-1980s, economic reforms turned to urban areas to improve industrial productivity of the SOEs, in which government as the judge and the SOEs as the athletes should be functionally and institutionally separated (Naughton 2013).

It was in October 1992 that the 14th National Congress of the CPC proposed to establish a socialist market economy while dissolving the disputes between the left and the right, and thus market is recognized nationwide to play an important role in the allocation and utilization of resources in kinds. Moreover, the 15th National Congress of the CPC in September 1997 elucidated the rule of law for a market economy. Subjects, contracts, and property rights are regarded as the three essential elements of the rule of law (Gao 2002). Corporatization rather than privatization is thus characterized as the Chinese style in comparison with the radical reforms of the former Soviet Union and Eastern Europe. It was in 1986 that the National People's Congress passed and issued the General Principles of the Civil Law, and its implications are far reaching for the Chinese transition from a totalitarian regime since civil law or civil code deals with civil rights and obligations among subjects with equal status.

Corporate entities as legal persons in contemporary China refer to not only economic entities but also social entities and even political entities. There are five types of corporate entities initially categorized by the census center of the National Bureau of Statistics of China, which are governments, nonprofit organizations (NPOs), enterprises, communities, and associations. In particular, governments are composed of all level organizations of political parties, legislature, bureaucracy, and judiciary from national level through provincial level and municipal level to grass-roots level. NPOs consist of all organizations delivering public services either as public institutional organizations (governmental NPOs) in accordance with the Interim Regulations on the Registration of Public Institutions issued in 1998 or as private non-enterprises (nongovernmental NPOs) in accordance with the Provisional

Regulations on the Registration of Private Non-Enterprises issued in 1998. Enterprises are made up of all kinds of enterprises in accordance with the Regulations on the Registration of Enterprises as Legal Persons issued in 1988 and the Regulations on the Registration of Companies issued in 1994. Communities are represented by urban residents committees in accordance with the Organic Law of the Urban Residents Committees issued in 1989 and rural villagers committees in accordance with the Organic Law of the Villagers Committees issued in 1987. Associations as legal persons are created in accordance with the Regulations on the Registration of Social Organizations issued in 1998 including academic associations, professional associations, civic associations, trade unions, and foundations.

How have governments in China been organized together effectively and efficiently? Yingyi Qian (2003) argued that the Chinese government has taken an organizational structure of decentralization even in the period of the centrally planned economy from 1949 to 1978, which is different from a Soviet type of the unitary system, i.e., the multidivisional form in terms of enterprise management in which governments are organized into the structure of “tiao” and “kuai.” The term “tiao” refers to the vertical lines of authority over various sectors reaching down from the ministries of the central government, and the term “kuai” refers to the horizontal level of authority of the territorial government at the provincial or local level, according to Kenneth Lieberthal (2003). It is argued that the “tiao-kuai” structure of the Chinese government is institutional arrangements of quasi-federalism (Qian and Weigast 1996), which were reinforced by the fiscal quasi-federal arrangement of the division of labor between central taxation and local taxation in 1994. However, the fiscal division, which resulted in centralization in taxation and decentralization in expenditure, is regarded as the source of central-local conflicts of de facto federalism in China (Zheng 2007).

Centralization and/or decentralization of authority is the dilemma of institutional arrangements even from the historical perspective of China. There are more than 4000 years of Chinese civilization taking Emperor Da Yu as the start point of his ascending the throne in 2070 BC. Confucius in his book *Li Ji-Li Yun* called for the great Way of “tian xia wei gong” (sharing the country with the people), an ideal type of commonwealth. While the history of China witnesses the rise and fall of dynasties, there are indeed five great periods of “tai ping sheng shi” (the time of just polity, peaceful society, and prosperous economy), which are the period of Spring and Autumn (770BC–476BC), the period of Emperor Wen and Emperor Jing in the Western Han Dynasty (207BC–25), the period of Emperor Li Shimin and Emperor Li Longji in the Tang Dynasty (627–741), the period of Emperor Kang Xi and Emperor Qian Long in the Qing Dynasty (1681–1796), and the period of the Golden Ten Years of the Republic of China (1911–1921), according to Jiexiang Wu (2013). All these periods are related to a decentralized system of authority for the sake of societal vitality in contrast with a centralized system of authority for the sake of societal stability.

Drawing on federalism by Daniel Elazar (1998) and a compound republic theory by Vincent Ostrom (2008), Wu argued that he has decoded the genetic code of good government in Chinese history that was encoded in the mysterious graphs of “he tu”

and “luo shu” based on the ancient legendary stories of natural revelation, from which the classic book *I Ching* (the book of changes) was derived embodying many elements of Chinese culture (Wu 2013). Therefore, the graph of “luo shu” in number is related to the eight trigrams and nine halls diagram like sudoku, which can be metaphorically related to the matrix of polycentric governance. Moreover, Guan Zi (a great scholar in ancient China) in his book *Guan Zi-Qing Zhong Wu* stated that the multiple (9×9) matrix of governance is in accordance with the Way of Heaven, i.e., one center of polity is embedded in eight subcenters of polities around, to paraphrase Wu’s argument. Thus, polycentric governance in terms of the mixture of centralization and decentralization can be approached from the synthesis of Western and Eastern civilizations.

4.5 Key Statistical Insights

According to the 2001 census data, the total number of corporate entities is 5,107,015, in which the number of governments is 307,011, the number of NPOs is 834,921, the number of enterprises is 3,025,862, the number of communities is 832,941, and the number of associations is 106,280. Based on the 2008 census data, the total number of corporate entities is 7,098,765, in which the number of governments is 249,670, the number of NPOs is 861,245, the number of enterprises is 4,959,671, the number of communities is 841,090, and the number of associations is 187,089. Thus, the average annual growth rate of the total number from 2001 to 2008 is 4.8, the average annual decrease rate of governments is -3.0, the average annual growth rate of NPOs is 0.4, the average annual growth rate of enterprises is 7.3, the average annual growth rate of communities is 0.1, and the average annual growth rate of associations is 8.4.

Seemingly, the transition from the totalitarian regime in terms of the decrease of governments was significantly accompanied by the growth of enterprises and the growth of associations in relation to the emergence of a market economy and a civil society. Moreover, the diversification of corporate entities shows the institutional isomorphism across regions and over time (see Table 4.1). Enterprises occupy the largest share in the total number of corporate entities, NPOs and communities hold the second largest shares, and governments and associations take the smallest shares. Incremental institutional reforms of transitional China are characterized with methodological experimentalism. Institutional reforms are to start in an experimental region, and then the experiences of institutional change are transferred to other regions. In fact, the experimental design of institutional change in China is greatly drawn on the theoretical and empirical findings of the institutional studies of developed countries. Just as there are three mechanisms of institutional isomorphic change, coercive, mimetic, and normative (DiMaggio and Powell 1983), the institutional isomorphism of transitional China is based on the polycentric interdependent structure of the state, the economy, and the society to cope with the uncertainties of political, economic, and social globalization.

Table 4.1 Institutional isomorphism of corporate entities, %

	Governments	NPOs	Enterprises	Communities	Associations
2001					
National	6.01	16.35	59.25	16.31	2.08
Mean	8.14	17.62	52.65	19.31	2.29
SD	5.02	7.14	18.11	10.09	0.75
CV	0.62	0.41	0.34	0.52	0.33
2004					
National	4.57	14.54	62.87	15.99	2.03
Mean	6.70	16.71	55.16	19.05	2.38
SD	4.97	6.91	17.83	9.53	0.93
CV	0.74	0.41	0.32	0.50	0.39
2008					
National	3.52	12.13	69.87	11.85	2.64
Mean	5.39	14.32	62.22	14.81	3.26
SD	4.53	5.74	16.91	8.17	1.52
CV	0.84	0.40	0.27	0.55	0.47

Note: SD denotes standard deviation, and CV denotes coefficient of variation

Source: National Bureau of Statistics of China

The emerging polycentric pattern of governance is derived from the unity and diversity of corporate entities across public, private, and third sectors. Table 4.1 presents the polycentric distribution of corporate entities by type, which is metaphorically understood as the trivariate normal distribution of the state, the economy, and the society. Governments, enterprises, and associations are indicated by the marginal distributions of corporate entities in the state, the economy, and the society, respectively, while NPOs and communities are indicated by the joint distributions thereof. Structurally, there is a correlation matrix between governments, NPOs, enterprises, communities, and associations, which indicates the networked pattern of polycentric governance. The correlation matrix in 2008 shows that there are the significantly negative relationships of enterprises with governments, NPOs, communities, and associations and the significantly positive relationships between governments, NPOs, communities, and associations (see Table 4.2).

The correlated structure of the polycentric pattern of governance however needs to be decoupled through exploratory factor analysis, which resulted in the factor loading matrix shown in Table 4.3, given the hypothesis that polycentric governance is underpinned on the constitutional trinity of the state, the economy, and the society discussed above. The two-factor solution uncovers the latent variables of institutional change with two dimensions, in which the first factor separates enterprises from governments, NPOs, communities, and associations, indicating the market-economy-oriented (MEO) institutional change, and the second factor separates governments and communities from NPOs and associations, indicating the civil-society-oriented (CSO) institutional change. Just as Ferdinand Tonnies ([1887]1957) argued that the territorial community as authentic communal life is different from the functional society as voluntary associational life, territorial

Table 4.2 Correlation matrix of corporate entities by type, 2008

	Government	NPO	Enterprise	Community	Association
Government	1.00				
NPO	0.43	1.00			
Enterprise	-0.86	-0.76	1.00		
Community	0.83	0.54	-0.94	1.00	
Association	0.46	0.55	-0.65	0.53	1.00

Source: National Bureau of Statistics of China

Table 4.3 Factor loading matrix

	2001		2004		2008	
	Factor 1	Factor 2	Factor 1	Factor 2	Factor 1	Factor 2
Government	0.92	-0.25	0.87	-0.35	0.85	-0.44
NPO	0.59	0.61	0.64	0.64	0.76	0.47
Enterprise	-0.99	0.05	-0.99	0.04	-0.99	0.06
Community	0.86	-0.45	0.87	-0.40	0.91	-0.29
Association	0.52	0.60	0.64	0.45	0.73	0.46
Eigenvalue	3.19	1.00	3.30	0.89	3.67	0.72

Source: Census data from the National Bureau of Statistics of China

communities surveyed in transitional China are related to political state rather than civil society.

4.6 Illustrative Cases and Mapping

Grassroots democracies in China are established and governed by residents' committees and villagers' committees elected directly by citizens in urban and rural areas. On direct democracies are based representative democracies characterized with the People's Congresses and the Political Consultation Congresses from local to national led by the CPC as the ruling party. Delegates of the People's Congresses at the levels of county, district, and township are elected directly by their constituents, and they vote for the provincial delegates who then vote for national delegates. However, the Political Consultation Congresses are established at the county level and above and their delegates are politically appointed on the basis of proportional representation of political parties and organizations. In comparison, the People's Congress can be understood as the House of Representatives and the Political Consultation Congress as the Senate. The President as the CPC, state, and military head, the State Council as the executive branch, and the Judiciary are legitimately derived from the National People's Congress. By the same token, heads of provincial and local governments are, respectively, elected by the People's Congresses at provincial and local levels.

The Chinese economy is to some extent being driven by small- and medium-sized private enterprises since they determine the MEO institutional change in terms of the share of enterprises in the total corporate entities. Based on the census data of corporate entities in 2008, eastern coastal regions of Beijing, Tianjin, Shanghai, Jiangsu, Zhejiang, and Guangdong show the largest share of enterprises in the total corporate entities with the range from 80 to 94 %. Moreover, the scatterplot of factor scores derived from the census data of corporate entities in 2008 (see Fig. 4.5) indicates the regional distribution pattern along the two dimensions of institutional change; the first dimension concerns the MEO institutional change, and the second concerns the CSO institutional change. Structurally, Shanghai, Beijing, Tianjin, Jiangsu, Guangdong, Zhejiang, and Liaoning represent the more developing regions of a market economy on the basis of the first factor score, while Guangxi, Yunnan, Ningxia, Sichuan, Gansu, and Fujian represent the more developing regions of a civil society, according to the second factor score. Tibet is the outlier of the regional distribution of polycentric governance.

Just as the correlation matrix in 2008 shows the significant positive relationships of governments with NPOs, communities, and associations, the development of a civil society has not been separated institutionally from governments, which seems to confirm a type of Chinese corporatism (Howell 2012). Many different models of civil society emerged since the associational revolution beginning in the early

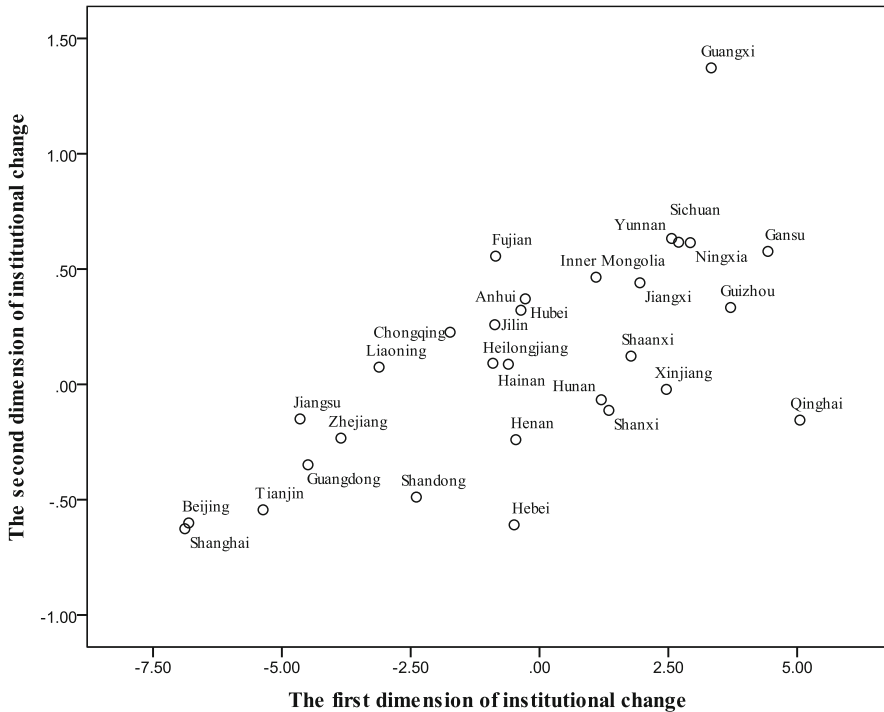


Fig. 4.5 Scatterplot of factor scores by region, 2008

1990s, ranging from models of autonomous civil society in Guangdong, Yunnan, and Guangxi to models of state supervision of group activity in Beijing, Shanghai, and Jiangsu (Teets 2015). The more autonomous model is based on collaboration between local government agencies, independent grassroots groups, and international nongovernmental organizations, and the supervised model emphasizes a government-led process of group development. Moreover, as for delivering public goods and services such as education, health care, social relief, environmental protection, and legal assistance, there are public institutions and private non-enterprises, i.e., governmental and nongovernmental NPOs, which are complementary rather than substituting.

To register a private non-enterprise or voluntary association, besides the fund and the range of activity, you need to find a formally established entity to be its affiliated unit and then to be able to be registered as a legal person or corporate entity by the Bureau of Civil Affairs at the local level (Wang 2011). However, the requirement of an affiliated entity for the administrative control of a civil society (Kang and Han 2005) has been removed for four types of social organizations such as industrial and commercial type, public charitable type, social welfare type, and social services type, in response to the advocacy for unified registration of social organizations by the 12th Five-Year Plan for National Economic and Social Development from 2011 to 2015. Although the independence of civil-society organizations from the state is arguable in transitional China, their participation in economic and social governance with governmental empowerment is far reaching (Yu and Guo 2012). It is worth to mention that political associations such as labor unions, youth leagues, and women associations are extremely controlled by the party-state system.

4.7 Concluding Remarks

Thanks to the reform and opening-up policy, China now is the second largest economy and the first largest country of foreign trade in the world, given its membership of the World Trade Organization in 2001. However, it is arguable to explain the effects of institutional change on the better economic performance in transitional China. Western liberal democracy in terms of political competition of the multiparty system is definitely not the answer at least right now. Francis Fukuyama in his book *Political Order and Political Decay* (2014) argued that three building blocks are required for a well-ordered society that you need a strong state, the rule of law, and a democratic accountability and you need them all together. His argument to a great extent responded to the significant role of government in economic development which concluded from the empirical studies of the economic miracle of East Asia (Stiglitz and Yusuf 2000). New authoritarians in transitional China argued in parallel that a strong state is no doubt the necessary condition for reforms and meanwhile its power should be limited by the rule of law.

The Third Plenary Session of the 18th National Congress of the CPC in 2013 called for modernization of the country's governance systems and capabilities. *Rechtsstaat*, market economy, and civil society are regarded as the three goals of the

transition states from totalitarianism, and the harmonization of the trilateral relationships between government, market, and civil society is the key determinant to modernizing the state governance (Jing and Zhang 2009; Yu 2014). A synthetic theoretical framework of the constitutional trinity of political state, market economy, and civil society in correspondence with polycentric governance is set forth in this chapter to argue that the spectrum of rules as the functions of constraining and enabling of corporate entities composes the constitutional order in terms of different similarity and similar difference. In other words, the constitutional trinity above is analogous to the ecological systems of the unity and diversity of corporate entities ruled by the civil code.

The empirical analysis of the census data of corporate entities of transitional China shows the two dimensions of institutional change toward a market economy and then a civil society from a totalitarian regime. Given the embeddedness of the non-nested institutional arrangements of economic and social actors in the nested institutional arrangements of governments, which was partially confirmed by the significantly positive relationships of governments with NPOs, communities, and associations, the political order of transitional China has been restructured to accommodate the optimal mixture of direct democracy in terms of self-governance and representative democracy. It is good news that the Fourth Plenary Session of the 18th National Congress of the CPC in 2014 reiterated the rule of law as part of constitutionalization of the party-state system. In conclusion, the emerging polycentric pattern of governance in transitional China presages modernization of the country's governing systems and capabilities to come.

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Chapter 5

Accounting Information Fusion for Decision Making

Xinsheng Duan

Abstract This chapter attempts to establish a theoretical system of accounting information fusion in order to provide new ways and new means for effective use of accounting information to make decision. First of all, it is discussed that the quality of accounting information under the existing accounting standards may have some “drawbacks” such as “uncertain, incomplete, and irrelevant.” And then the concept of accounting information fusion is put forward based on information fusion theory for the military, and a framework of the theory of accounting information fusion based on D-S evidence theory is advanced in this chapter. Finally, the implementation of accounting information fusion system is discussed. It is suggested that the system of accounting information fusion can be designed using the concepts and the technologies in artificial intelligence and expert systems.

Keywords Accounting information fusion • D-S evidence theory • Accounting information fusion system • Artificial intelligence • XBRL

5.1 Introduction

How to make a decision? What kind of information should be based on to make a decision? Is the information provided by financial accounting accurate and relevant? How to use the information provided by financial accounting to make a decision?

It is required by International Accounting Standards (IASs) as well as Chinese Accounting Standards (CASs) that the information provided by financial accounting should satisfy the following criteria, i.e., understandability, reliability, relevance, comparability, materiality, substance over form, faithful representation, neutrality, and so on. The first question we will discuss is that the requirements here are all met by the accounting information in practice.

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In fact, the information produced in current accounting standards' system may contain some "limits"; in other words, the information may have "uncertainty, incompleteness, and irrelevance."

Therefore, if you make a decision based only on the accounting information, then the decision may not be scientific.

In this chapter, we will introduce a new approach, the so-called accounting information fusion (Duan 2014 and Duan and Foo 2014), to use accounting information as well as the other information to make a decision.

5.2 "Limitation" of Accounting Information

5.2.1 *Uncertainty of Accounting Information*

International Accounting Standards (IASs) are more principle based rather than rule based. In 2006, IAS was adopted by China except only fewer differences exist. Therefore, Chinese Accounting Standards (CASs) are also more principle based.

But there is a specific accounting standard followed by each industry in China before the principle-based standards adopted. For example, industrial accounting standards are followed by manufacture enterprises, and bank accounting standards are followed by financial institutions and so on.

As we know, principle-based standards focus on establishing general principles rather than concrete rules. For example, a lease is classified as a finance lease if its term is for the major part of the economic life of the asset based on the principle-based standards. On controversy, a lease is classified as a finance lease if its term is 75 % or more of the estimated economic life of the leased property based on the rule-based standards. Here, "major part" is a qualitative principle and "75 % or more" is a quantitative rule.

Why principles rather than rules?

The advantages for principle-based standards are as follows: by adopting principle-based standards, the IASs as well as CASs tend to include only a limited amount of guidance for applying the general principles to typical transactions, encouraging professional judgment in applying the general principles to other transactions to an entity or industry.

Of course, it has some difficulties that the principle-based standards be implemented in China. Because professional judgments are needed to apply general principles to some transactions, it is required that the accountants should have more experience and knowledge to explain and apply the general principles accurately. Unfortunately, there are so many differences among the accountants in practice. Some are rich in experience and qualified professionals, but the others are less experienced and lack of professional knowledge; therefore, there are quite differences for accounting information prepared by different accountants. The background, experience, and knowledge the accountants could have are the factors to impact the quality of financial accounting information (Li Gang et al. 2011).

Fair value is widely used and dominated in financial accounting currently although a lot of discussions and arguments are poured on it. Some believes that fair value measurement can enhance the relevance of financial information, but at the same time, fair value may be used as the tool to make revenue management or income manipulation for some listed companies and therefore destroy the reliability of financial information. On the other hand, the decrease of reliability can also impact the relevance of financial information. Thus, fair value measurement may result in a vicious circle (Zhang Xianzhi and Ji Kan 2012).

By the way, in practice in China, the accounting information may not be clearly expressed due to some reasons, or sometimes the users may be misunderstood of the meaning of accounting information. Although there is a criteria requirements of comprehensibility in IASs and CASs, for a variety of reasons, the accounting information provided by the businesses is ignored or can not be noticed by the users sometimes. For example, it is very difficult to catch the attention of the users because some enterprises disclose their information in very small typeface or in the place of media that is not easy to be noticed by the reader. Sometimes the information is too concise to be understood by the users.

In summary, in practice, there are so many factors to influence the use of accounting information. For example, the accounting practitioners are not so professional enough and they may master the guidelines not so accurately, fair value measurement standard may be applied inappropriately, accounting information may be expressed unclearly, and the users may misunderstand it. All of these factors could result in uncertainty of accounting information. Of course, some artificial accounting fraud will lead the accounting information more likely to be “distortions.”

5.2.2 Incomplete of Accounting Information

The transactions and events that occur actually in the business should be based on the following: to make recognition, measurement, and reporting and to reflect truthfully all accounting elements and other relevant information to guaranty the truth, reliability, and integrity of accounting information. This is the reliability requirements of accounting information in Chinese Accounting Standards (CASs).

There are two issues here:

Firstly, should all transactions and events that occur actually in the business need recognition, measurement, and reporting? Are there any transactions and events that have taken place but are not appropriately recognized, measured, and reported?

Obviously, there were so many transactions and events that happened but were not recognized. For example, the environmental pollution made by a company may occur every day, but the pollution effects have not been recognized. Such information is critical to information users; therefore, it should be recognized. This issue results from the complexity of transactions and events.

Secondly, are there any accounting elements and other related information that are not consistent with the recognition and measurement requirements of accounting standards?

Actually, there are so many accounting elements that do not meet the requirements of recognition and measurement of accounting standards. For example, are human resources the assets of a corporate? Should they be recognized and measured? Should the environmental pollution costs be included into the enterprise production cost? Such information is also critical to information users; therefore, it should be recognized too. This issue reflects the incompleteness of accounting standards.

On the other hand, the incompleteness of accounting standards is also reflected by monetary assumption. Many transactions and events as well as many accounting elements are not recognized or measured because they are hard to measure in money. According to Chinese Accounting Standards, the currency should be used as measurement scales when the economic entities make recognition, measurement, and reporting on financial accounting. In other words, the transactions and events or accounting elements are not included in the accounting system if they cannot be measured in money or not easily measured in money. For example, enterprise's prestige, reputation, and strategies, the CEO's personal charm, and the employee's ability to work are not reflected in the accounting information systems because they are not measured or not easily measured in the currency. These factors have a great influence on the overall strength of business and should play a significant role for investors to make decision. All of these information are definitely necessary to be included in the accounting information systems.

Of course, some human factors may also lead to accounting information "incomplete." Therefore, the complexity of transactions and events, the incompleteness of the accounting standards, and human factors result in incompleteness of accounting information.

5.2.3 The Relevance "Paradox"

The Chinese Accounting Standards (CASs) require that the accounting information provided by the business must be relevant to the economic decision-making needs of the investors and other users and can help investors and other users to evaluate or predict past, present, or future conditions of the company. The usefulness of accounting information depends on whether or not the information can be used to make a decision or enhance the decision-making levels.

Thus, the relevance is the usefulness for accounting information. The accounting information that have relevance characteristics should meet the decision-making needs of users. But there are many users of accounting information and their information needs cannot be unified. For example, different investors have different needs. A standardized, consistent format of accounting information does not meet the requirements of all users obviously. Therefore, it is impossible that the accounting information in accordance with current accounting standards are relevant with all information users. Irrelevance is the absolute and relevance is the relative.

Who are the users of accounting information?

The users of accounting information include the creditors that can be subdivided into general and priority creditors, enterprise employees, tax authorities, equity investors, and management of the company as well as the other stakeholders.

Creditors take care of the financial situation of the enterprise. Employees concern about the distribution of corporate profits and cash flow situation. The tax-related accounting information is handled by tax authorities. Equity investors can be divided into existing investors and potential investors. Existing investors have been more concerned with the current state of business, while potential investors pay more attention with the company's future development. Management focuses on all relevant information, not just the publicly disclosed information.

In fact, under the existing accounting framework and accounting standards, accounting information are based mainly on "fiduciary duty," produced in order to meet the requirements of equity investors. For other users, therefore, it is difficult to achieve a complete information relevance.

So is there any suitable ways and means of making public disclosure of accounting information to satisfy all users' decision-making needs? If you are trying to meet the information needs of all users, you will need to provide the information that all users concerned, for a kind of specific users these information will inevitably cause a great deal of redundancy. To find the information he or she needs is like a needle in a haystack; finally, he or she may give up this kind of information, so that the accounting information is irrelevant for him or her. If only the information needed by a certain class of users is provided, then other users' information needs cannot be fully met, so that the accounting information cannot be relevant to all users. This conflict situation is called the "paradox" of relevance of accounting information in this paper.

What causes the "paradox" of relevance of accounting information? It is believed that the main reason is the standardized, uniform format of current accounting information disclosure. How to solve it?

First of all, we should study and develop the new ways and means of accounting information disclosure. Second, it is really necessary for the users to do some twice processing for the current accounting information. It is argued in this paper that in the short period of time, it is difficult to change the existing format and contents of the accounting information disclosure. Thus, for a particular user, doing some twice processing of current accounting information is more feasible and realistic.

In order to solve the "paradox" of relevance of accounting information, overcome the incompleteness and the uncertainty of accounting information; the concept and theory of accounting information fusion are proposed in the following section. It is argued that the theory in this paper has the theoretical value and practical significance for promoting the development of accounting theory and methods, improving the development and use of accounting standards, and normalizing information disclosure of listed companies.

5.3 What Is Accounting Information Fusion (AIF)?

Accounting information fusion identifies, collects, analyzes, and processes the accounting information and non-accounting information from multiple sources to create new and valuable information for a decision-making problem being solved (Duan 2014 and Duan and Foo 2014).

So the characteristics of AIF are shown as follows:

Accounting information fusion is a concept. AIF can collect, analyze, and process the accounting and non-accounting information to create new and valuable information for a decision-making problem.

Accounting information fusion is a process to treat the information from the multiple sources to generate the more useful information for a decision-making problem.

Accounting information fusion is a theory to define the concepts, framework, and methodology of the treatment and the use of accounting information.

Accounting information fusion is a method to treat and use accounting information.

Accounting information fusion integrates the accounting information disclosed publicly with the information received from other sources to get the more useful information for a decision-making problem. Therefore, in this sense, accounting information fusion belongs to the secondary processing of accounting information.

Based on the concept of accounting information fusion, a three-tiered model providing accounting information is presented in the following:

The first layer, the data tier (or document tier), is the original description of the economic activities such as original invoices, outbound order as well as the other original vouchers, and so on.

The second layer, general ledger and statement tier, is made up of accounts, ledger, statements, and other data generated from accounting information systems in accordance with current accounting standards and system processing procedure.

The third layer, decision tier, is the information integrated based on the first two tiers and new recognition of economic activities or supplementing data messages, as well as the experts' experience and knowledge for decision-making purposes.

The three-tiered model providing accounting information is shown as in Fig. 5.1.

In this model, the box at the bottom is the economic activities taking place in enterprise. Such activities may be visible and may be invisible. They may have the original materials, such as invoices, receipts, etc. They may have nothing at all, only thing we know is that they have the effects to company. However for such effects it is very difficult to make clear or sometimes. For example, business insider dealing is such an economic activity that is implicit and has a deep impact on the enterprise. For a visible economic activity, if the recognition requirements of accounting standards are complied with, then it may be recognized in accordance with the standards, resulting in a data layer information. For the majority of hidden or implicit economic activities, in accordance with current accounting standards, they do not meet the recognition requirement, so they are not included in the first two layers of accounting information.

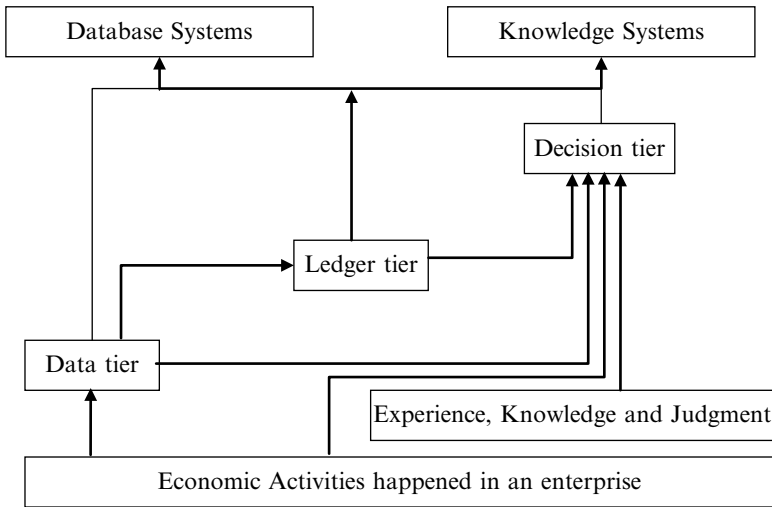


Fig. 5.1 Three-tiered model providing accounting information

For some economic activities in compliance with the accounting standards, we can describe it, resulting in a first layer accounting information, i.e., accounting information in the data tier. From the above discussion, accounting information in this layer is not reflected by all economic activities of the enterprise and is therefore incomplete.

In accordance with the current accounting information processing logic, after we get the accounting information in the data layer, we can process them in the current accounting information system to get second-tier accounting information, namely, ledger and statements' information based on the requirement of recognition, measurement, and disclosure in the accounting standards. Ledger and statements' information is generated from the data tier information fully in accordance with the accounting standards. As we discussed before, second layer information is not complete and not accurate because the accounting standards may be incomplete and inaccurate in some extent.

If the decision is made, just rely on these two layers of information; it is bound to be one-sidedness of decision making. Therefore, we need to look for the other relevant information to integrate with the former two-tier data to reach the third layer information, i.e., decision information which is more useful for decision making. The process to integrate all of these information is named accounting information fusion. The AIF can provide the information on the third tier which is more useful for a decision-making problem.

Accounting information fusion deals with not only the transactions and events that satisfy the recognition requirements of the accounting standards but also the economic activities that do not meet the recognition conditions. Accounting information fusion takes into account not only the documents, ledger, and statements'

information generated from the existing accounting information systems but also the decision maker's recognition on enterprise as well as the understanding, experience and knowledge of expert, and so on. Accounting information fusion considers not only the time attribute of accounting information (including history data, also including real-time data) but also space property of accounting information (such as paper information, electronic information; network information, media report, and many other information presented in different ways). Therefore, the information generated through accounting information fusion should be comprehensive, whereby decisions should also be made scientifically.

Accounting information fusion is not static and fixed. The process of accounting information fusion should be different for the different decision problems; therefore, accounting information fusion is specific and dynamic. The information obtained by accounting information fusion this time, together with the information in data layer and in ledger, and statements' layer can enter the database and knowledge base to provide the basis for the next fusion process and next decision-making problem.

In the following part, a theoretical framework of accounting information fusion based on D-S evidence theory is established. D-S evidence theory provides the powerful method and useful tool for the expression and combination of uncertainty information; therefore, it is particularly suitable for accounting information fusion.

5.4 Basic Concepts in D-S Evidence Theory

Full name of D-S evidence theory is Dempster-Shafer theory or Dempster-Shafer evidence theory, known as DST. The theory originated in 1967 when Dempster put forward the concepts of upper probability and lower probability introduced by the multivalued mapping (Dempster 1967). In 1976, the further improvement was made, and a mathematical theory of evidential reasoning was established by Shafer (Shafer 1976). Basic probability assignment, belief function, and commonality function as well as the Dempster rule for belief function combination were proposed. Duan Xinsheng applied the evidence theory to the decision-making area and presented the concept of evidence decision and the related mathematical model in 1993 and 1996 (Duan 1993, 1996). After the 1990s of the last century, the research concerned about the applications of evidence theory was flourished, especially evidence theory as a method of information fusion that received more attention from researchers (Huang Xinhan and Li Xinde 2011). Research is primarily focused on the expression of information and the combination of conflicted evidence (Yang Fengbao and Wang Xiaoxia 2010).

Basic probability assignment, belief function, and commonality function as well as the Dempster rule for belief function combination are very important concepts and theory in D-S evidence theory.

Basic probability assignment is a function satisfied a certain criteria in a so-called discriminate frame.

Suppose Θ is a discriminate frame. If function $m : 2^\Theta \rightarrow [0,1]$ satisfies the following conditions,

1.

$$m(\phi) = 0$$

2.

$$\sum_{A \subseteq \Theta} m(A) = 1,$$

then m is called a basic probability assignment on Θ . $\forall A \subseteq \Theta, m(A)$ is called the basic probability number of A .

Belief function is an important concept in D-S evidence theory.

Belief function and commonality function are defined based on basic probability assignment.

Suppose Θ is a discriminate frame. If m is a basic probability assignment on Θ , then the function Bel defined as

$$\forall A \subseteq \Theta, \text{Bel}(A) = \sum_{B \subseteq A} m(B)$$

is a belief function on Θ .

Suppose Θ is a discriminate frame. If m is a basic probability assignment on Θ , then the function Com defined as

$$\forall A \subseteq \Theta, \text{Com}(A) = \sum_{A \subseteq B} m(B)$$

is a commonality function on Θ .

It is proved that Bel and Com can be defined by each other.

$$\forall A \subseteq \Theta, \text{Bel}(A) = \sum_{B \subseteq A} (-1)^{|B|} \text{Com}(B)$$

$$\forall A \subseteq \Theta, \text{Com}(A) = \sum_{B \subseteq A} (-1)^{|B|} \text{Bel}(B)$$

Thus, the information expressed by Bel and Com is totally same.

Suppose Θ is a discriminate frame. m is a basic probability assignment on Θ . $\forall A \subseteq \Theta$ if $m(A) > 0$, then A is called the focus element of m .

Suppose Θ is a discriminate frame, m_1, m_2 are two basic probability assignments, and focus elements are A_1, A_2, \dots, A_p and B_1, B_2, \dots, B_q , respectively, then the function $m : 2^\Theta \rightarrow [0,1]$ defined as

$$m(A) = \begin{cases} 0 & A = \phi \\ \frac{\sum_{A_i \cap B_j = A} m_1(A_i) m_2(B_j)}{1 - \sum_{A_j \cap B_j = \phi} m_1(A_i) m_2(B_j)} & A \neq \phi \end{cases}$$

is the combination of m_1, m_2 . The rule to calculate m is called Dempster combination rule or Dempster rule for abbreviation.

Next, an example will be presented for your understanding of D-S theory.

Suppose the discriminate frame $\Theta = \{x \mid 0 \leq x \leq 100\}$, m_1 and m_2 are two basic probability assignments on Θ , shown as Tables 5.1 and 5.2.

Based on Dempster combination rule, we can calculate the combination of m_1 and m_2 . The result is shown as in Table 5.3.

Table 5.1 Basic probability assignment m_1

	LL	UP	W
1	50	80	0.2
2	30	40	0.3
3	70	90	0.4
4	60	80	0.1

Note: *LL* lower limit, *UP* upper limit, *W* basic probability number

Table 5.2 Basic probability assignment m_2

	LL	UP	W
A	60	70	0.1
B	65	80	0.5
C	50	60	0.2
D	0	100	0.1
E	90	100	0.1

Note: *LL* lower limit, *UP* upper limit, *W* basic probability number

Table 5.3 The combined basic probability assignment

	LL	UP	W	W
1	60	70	1a + 4a	0.0484
2	65	80	1b + 4b	0.2419
3	50	60	1c	0.0645
4	50	80	1d	0.0323
5	30	40	2d	0.0484
6	70	70	3a	0.0645
7	70	80	3b	0.3226
8	70	90	3d	0.0645
9	90	90	3e	0.0645
10	60	60	4c	0.0323
11	60	80	4d	0.0161

Table 5.4 The calculation process

	LL	UP	Formula	Results	W
1a	60	70	0.2*0.1	0.02	0.0323
1b	65	80	0.2*0.5	0.1	0.1613
1c	50	60	0.2*0.2	0.04	0.0645
1d	50	80	0.2*0.1	0.02	0.0323
1e	ϕ		0.2*0.1	0.02	
2a	ϕ		0.3*0.1	0.03	
2b	ϕ		0.3*0.5	0.15	
2c	ϕ		0.3*0.2	0.06	
2d	30	40	0.3*0.1	0.03	0.0484
2e	ϕ		0.3*0.1	0.03	
3a	70	70	0.4*0.1	0.04	0.0645
3b	70	80	0.4*0.5	0.2	0.3226
3c	ϕ		0.4*0.2	0.08	
3d	70	90	0.4*0.1	0.04	0.0645
3e	90	90	0.4*0.1	0.04	0.0645
4a	60	70	0.1*0.1	0.01	0.0161
4b	65	80	0.1*0.5	0.05	0.0806
4c	60	60	0.1*0.2	0.02	0.0323
4d	60	80	0.1*0.1	0.01	0.0161
4e	ϕ		0.1*0.1	0.01	

The calculation process is shown as in Table 5.4.

5.5 A framework to Use Accounting Information Fusion to Make Decision

A theoretical framework to use accounting information fusion to make decision will be established in this section.

Firstly, in-depth analyses of the decision problem are made to set up the so-called discriminate frame. Secondly, the extraction and processing of the information included in XBRL financial report is made, and the other related information is collected as well. Thirdly, a unified expression for both accounting information and non-accounting information is established. Finally, all information including accounting information and non-accounting information will be integrated using one of the combination rules to get the synthesized information that is believed to be more useful for the decision-making problem.

5.5.1 *Discriminate Frame*

First of all, according to the decision problem, we will establish the so-called discriminate frame. The discriminate frame is the limited set of possible answers for the decision problem, and it is assumed that there is one and only one of these answers is correct. The discriminate frame is expressed as letter Θ .

5.5.2 *Sources of Information*

XBRL financial report is now widely used in accounting information disclosure in China and all over the world. In the recent years, the Shanghai Stock Exchange and Shenzhen Stock Exchange launched their own classification standards, and Chinese Treasury Department has introduced a national classification standard too. Therefore, all of the listed companies in China are providing financial reports in XBRL format, and other types of companies will provide XBRL financial reports in the near future. Thus, XBRL financial reports can be used as a source of information for accounting information fusion.

In addition, other publicly disclosed information, such as corporate social responsibility report, is another source of information that can be used. Enterprise announcement and government circulars can also be the sources of information. Even some of the media coverage is sometimes also a valuable source of information. In addition, experts or analysts' experience, knowledge, and objective judgment can also be an important source of information.

5.5.3 *Information Expression*

We can apply a uniform way to express information received from multiple sources.

First, XBRL financial reporting information related to the decision problem can be retrieved, and then a certain rule can be used to transfer these information into a basic probability assignment on the discriminate frame Θ .

For other qualitative information, we can ask the experts or analysts to map this information into a basic probability assignment on the discriminate frame Θ .

For the experience, knowledge, and judgment that the experts or analysts personally have, they can map these information to a basic probability assignment on the discriminate frame Θ .

In short, after such an information expression process, it is assumed that we get n basic probability assignments m_1, m_2, \dots, m_n on the discriminate frame Θ .

5.5.4 Information Combination

After we get n basic probability assignments on the discriminate frame Θ , we can integrate these n basic probability assignments m_1, m_2, \dots, m_n to reach a combined basic probability assignment m on the discriminate frame Θ based on a combination rule, for example, Dempster combination rule.

5.5.5 Decision Making

Finally, we will judge the best answer for the decision-making problem using the combined basic probability assignment m we get in the last step.

The realization or implementation problem of accounting information fusion system was discussed in reference materials (Duan 2014 and Duan and Foo 2014). Accounting information fusion system can be designed using the idea and concepts in the area of artificial intelligence and expert systems; therefore, an intelligent system will build up for accounting information fusion. Establishing accounting information fusion system can provide decision makers with the platform on which the basic functions of accounting information fusion can be applied conveniently.

5.6 Implementation of Accounting Information Fusion System

In this section, we will discuss the realization or implementation problem of accounting information fusion system. Establishing accounting information fusion system can provide decision makers with the platform on which the basic functions of accounting information fusion can be applied conveniently.

Accounting information fusion system will be designed using the idea and concepts in the area of artificial intelligence and expert systems; therefore, an intelligent system will build up for accounting information fusion. To implement an intelligent system, the following issues need to be addressed:

- Information extraction and data processing of XBRL financial report
- Fusion algorithm to be realized
- The establishment and gradually improvement of databases, knowledge base, and rule base for the intelligent system
- Realization of adaptive learning function

In addition, in the process of system implementation, the ideas and theory of software engineering should be followed. We need to complete a series of steps: feasibility study, systems analysis, systems design, coding, debugging, test, and so on. A modular and structured thinking should be followed from beginning to the end.

Concerning about programming, we will use MATLAB platform as a tool. MATLAB system is used because MATLAB is a powerful, fully featured package of tools. Main features of MATLAB are strong calculating ability, strong drawing skills, and high-efficiency programming language. MATLAB provides a number of specialized interfaces, such as the Excel interface, database interface, Java interface, C++ interface, and so on. Therefore, the efficiency of programming will be improved using MATLAB as a tool. The successful completion of system implementation and system integration will be assured technically if we use MATLAB as a platform.

Of course, after the completion of accounting information fusion system, it can be used to verify the validity and correctness of the accounting information fusion model established above through simulation and empirical study.

5.7 Conclusions

This chapter discusses the quality of accounting information under the existing accounting standards and reaches the conclusion that there may be some “limits,” that is, “uncertainty, incompleteness, and irrelevance,” existed in the accounting information which explains the need for secondary processing of accounting information and forms the theoretical foundation of accounting information fusion.

Following these discussions, the concept of accounting information fusion is introduced, and a three-tiered model providing accounting information is put forward and analyzed. It is believed that the information obtained under the existing accounting standards belongs to first layer and second layer information. These two layers of information are incomplete, so the decision based on them may be made by one-sided. In order to make the decision making more scientific, it is necessary for the first two layers of information to integrate with other sources of information to get a third layer of information. Third layer information is reached after the completion of accounting information fusion and can be used for a particular decision problem. This information is more comprehensive compared with the first two layers of information so that the decision made based on it would be more scientific.

In the following research, the theoretical framework of accounting information fusion is presented based on D-S evidence theory. This framework for integrating the accounting information provides a new method and a new way to use accounting information. This approach expresses the different sources, different formats, and different types of information with the unified way, i.e., basic probability assignments on the discriminate frame Θ , and then all of these information can be integrated using Dempster combination rule, and the final combined information can be used for decision making.

The realization of accounting information fusion system is discussed in this chapter. It is argued that accounting information fusion system can be designed using the idea and concepts in the area of artificial intelligence and expert systems; therefore, an intelligent system will build up for accounting information fusion.

Accounting information fusion provides new ways and means of effective use of accounting information. Therefore, the study here has a certain theoretical and practical value for promoting the development of accounting theory and methods, improving the development and use of accounting standards, and normalizing information disclosure of listed companies. As the theory of accounting information fusion is improved and accounting information fusion system is realized gradually in the future, the role of accounting information will be enhanced.

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Part III
Risk

Chapter 6

Early Warning System for Finance

Peng Wu, Lei Gao, and Qiong Wang

Abstract In this chapter, the financial risk is divided into traditional financial risk and earning's management risk. Based on the analysis of noncorrelation between the traditional financial risk and earning's management risk, this study puts forward the necessity of establishing a two-dimensional model of financial early warning analysis. We use the special treatment companies and irregularities' companies in Chinese stock market from 2007 to 2013 as samples and the data of T-1 year to screen indexes by principal component analysis method. Then a discriminant function model is constructed by Fisher multivariate linear discriminant method. We confirm the validity of the model by using the data of T-2, T-3, and T-4 years.

Keywords Financial crisis • Financial early warning • Earnings management • Principal component analysis • Fisher multivariate linear discriminant

6.1 Introduction

In an environment of volatile economics, it is of great significance to all the investors to integrate accounting information into the warning system of financial distress before the breakout of financial crisis. Most current financial distress prediction models are based on the financial information provided directly by the companies (Ohlson 1980), which might have suffered from the earnings management engaged by the management to make the company appear to be attractive to the investors (Beneish 1997). In short, when using the financial reports issued by listed companies, the stakeholders may face with two kinds of risks: one is caused by financial distress, which reflects the real operational performance of a company; the other is

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caused by earnings management behavior, which represents one of the information risks to investors. For this concern, we introduce the earnings management risk as another dimension to the traditional financial distress warning system and use the typical linear discriminant function to establish a two-dimensional financial warning model, providing a model of financial risk assessment based on earnings management to the stakeholders.

The objectives of this chapter are as follows:

- Introduce background of the two-dimensional financial warning model
- Explain the theoretical framework underlying the two-dimensional financial warning model
- Illustrate the application of the model using empirical data based on Chinese stock markets and the further application of the model
- Highlight the contributions of the study to future research of earnings management and its values for modern management

6.2 Background

Researchers have begun their investigations of early warning systems of financial distress since 1960s. With the increase of the number of companies going public, reporting financial results to the public has become a mandatory requirement, which also led to the increase of information risk for investors. Since 1980, the academics have put a lot of effort into the examination of earnings management. In this section, we will discuss the prior research on both the earnings management and early warning systems of financial distress.

6.2.1 Earnings Management

Earnings management has been defined differently in prior research. Schipper (1989) described earnings management as an action when managers manipulate financial results in order to achieve profit target. Healy and Wahlen (1999) defined earnings management as a way used by management to manage financial results through manipulating judgment and estimates such as (1) to give a wrong impression on stakeholders about the firm's financial performance or (2) to influence other potential users that rely on the financial reporting results. Jones (1991) pointed out that earnings management relates to the use of discretionary accounting accruals to influence reported earnings. Struggling to maximize firms' profits and stock value, managers may sometimes be more likely to engage earnings management practices (Jiraporn et al. 2008).

Earnings management could be driven by managerial decisions to satisfy the stock market and the need of other users such as creditors. It has been shown that stock market reacts favorably to good earnings results (Junttila et al. 2005). Firms

might also engage earnings management in order to avoid breaching debt covenants or to acquire capital (Hirshleifer et al. 2004). In an effort to meet financial analysts' forecasts and investors' expectations, firms may be inclined to manipulate their estimates, using earnings management, and thus to maintain or increase its market value (Lin et al. 2006; Chevis et al. 2007; Rees and Sivaramakrishnan 2007). Daniel et al. (2008) find that firms consider targeted dividend levels as important earnings goals. Consequently, they may manage earnings to meet dividends' target even though such management has no impact on cash flows and, therefore, does not affect a firm's ability to pay dividends.

6.2.2 Financial Distress

Financial distress can be defined as a situation where a company is having operational, managerial, and financial difficulties (Adeyemi 2011). A review of financial distress literature reveals that there has been a considerable amount of attention to the development of prediction models of financial distress. Most of the proposed models rely on financial ratios which can hardly represent all the aspects of a company. Moreover, there is a lack of a well-developed theory on financial distress that specifies what financial statement ratios should be incorporated into such a model or what weight should be used for each ratio such as to best estimate the likelihood of financial crisis, which limits the use of these models (Beaver et al. 2011). In addition, the influence of nonfinancial or qualitative factors, such as management experience, customer concentration, overreliance on a few suppliers, diversification of products, and qualified audit opinion, has not been incorporated into these models in evaluating the risk of financial distress (Grunert et al. 2005). For this reason, the results of such research are often inconsistent and will be difficult to generalize.

One of the widely recognized causes of financial failure is poor management (Gestel et al. 2006). Danielsson (2008) classify the causes of financial risk as endogenous and exogenous and find that endogenous causes are more predominant than that of exogenous causes. More emphasis could be put on endogenous factors than exogenous.

6.2.3 Risk of Financial Distress and Earnings Management

Managers will face a number of legal charges and penalties for issuing inappropriate financial statements and disclosures, such as sanctions, losing jobs, reputation loss, criminal charges, and economic losses. Prior research suggests that, in general, such penalties are sufficient to deter management from issuing intentionally biased forecasts (McNichols 1989; Frankel et al. 1995), so it's likely to reduce the incentives for managers to engage earnings management to manipulate reported financial results.

On the other side, Adam S. Koch (2002) found that management earnings forecasts issued by distressed firms exhibit upward bias and are less reliable than that of non-distressed firms. To explain this observation, they argued that managers of distress firms may have a greater incentive to release upwardly biased forecasts due to that they were worried that the firm may not last long enough for them to even face the penalties for inappropriate disclosures. Consistently, prior research also finds that generally speaking firms with low profitability and high leverage are more likely to use earnings management and are less likely to provide voluntary accounting disclosures (Iatridis and Kadorinis 2009).

Historically, there have been numerous fraud cases in those firms that were experiencing financial difficulties and thus tend to use earnings management to reach earnings goals. Currently, there has been limited empirical research in identifying the relationship between earnings management and corporation financial crisis. This study will attempt to examine the relationship between these two. We believe that prior research has the following problems and issues:

Firstly, the current early warning models of financial distress have assumed that the reported information in financial statements of listed companies was true, without considering the possibility that managers might have used earnings management to manipulate financial results, which leads to the use of unreliable data and thus unreliable research results. Some scholars have considered this problem but take the traditional financial crisis and the earnings management behavior as a causal relationship and thus only to use certain earnings management theory to reduce such an impact, which is only a partial rather than a complete adjustment based on the financial ratios.

Secondly, most of the current financial early warning models are established based on existing financial index system, rather than based on the interests of shareholders. At the same time, it also lacks the consideration of the needs of different types of financial statement users.

Thirdly, earnings management behavior is largely influenced by managers' personal leadership style, changes of stock market, and corporate governance structure; therefore, it is necessary for use to integrate nonfinancial variables into the early warning models in order to improve the accuracy of the predications.

Besides proposing a prediction model, we believe that it is also important to provide suggestions on what methods a firm should use to prevent the risk of financial distress, making the model more applicable in real practices.

In the next section, we will discuss the conceptual framework of the two-dimensional warning model and how we will establish this model.

6.3 A Conceptual Overview

With more and more concerns that financial reports might be manipulated by management, stakeholders should pay close attention to not only the real financial risk but also the risk of earnings manipulation engaged by management. Therefore, we

divide the corporate financial risk into two dimensions: one is the traditional financial distress, which comes from the poor management of the enterprise; the other is the earnings management risk, which comes from various misreporting of financial information including fraud.

We use two dummy variables to proxy for the two dimensions, respectively. We use special treatment as the variable to proxy the intrinsic financial risk caused by poor management, with a value of 1 if the company is designated as a “ST (special treatment)” company and 0 otherwise as contingency theory literature often did which is in accordance with prior literatures on financial prediction (Wang and Ji 2006). We then use financial reporting irregularities to proxy for earnings management risk, with a value of 1 if the company had been punished by China Securities Regulatory Commission at least once for its financial reporting irregularities and 0 otherwise. The companies in our sample can be divided into four groups according to the above two dimensions (see Fig. 6.1), listed as follows:

- Group (0, 0): a company with good financial performance, no earnings management, which is normally a safe and good company to invest.
- Group (1, 0): a company with high traditional financial risk but without earnings management in its financial results, which has some real financial issues, requiring attention from investors.
- Group (0, 1): a company appears to have no financial risk but with certain level of earnings management. These companies have shown good financial results, but the reliability of their financial reports might be doubtful.
- Group (1, 1): a company with poor financial performance and high risk, also with earnings management, which is extremely concerning and should be the focus of attention.

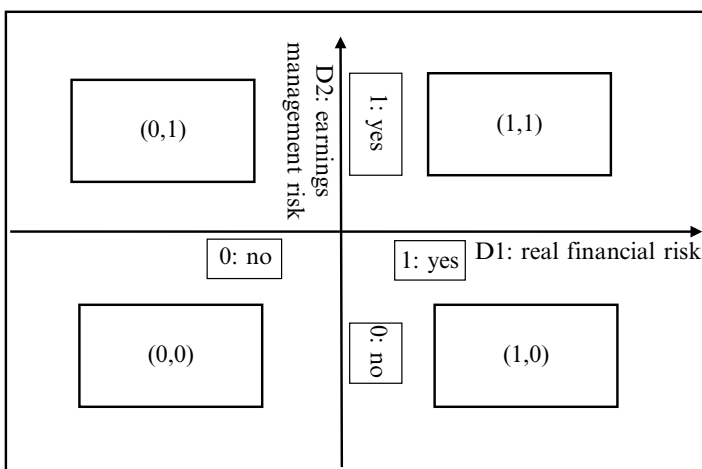


Fig. 6.1 Two-dimensional financial risk schematic diagram

6.4 Why It Concerns Management

Accounting information plays an important role in the world of business, and it affects a government's macroeconomic policy-making and the microeconomic decisions of enterprises, families, and individuals at all levels.

On one side, for management, an efficient and comprehensive financial risk warning system could help them take proactive actions to adjust the firm's systems of productions and operations. Once any of the key factors that may result in financial risks exceeds a specific threshold, sending an alert, the management should take immediate actions to respond to the alerts and find the root cause and thus to prevent the financial distress from occurrence. In other words, before letting the company get into financial trouble, managers can take actions in time to respond to the potential risks by removing the factors causing the financial risk and such that to reduce the risk of financial crisis to an acceptable level.

On the other side, although both real financial risk and earnings management risk are results of management's decisions or actions, they reflect different issues with or the sides of management. The real financial distress risk is a result of business operations run by the management, which relates to the competence of management, while earnings management risk is a result of the management's greed or aggressiveness, which indicates an integrity issue of the managers. Stakeholders should evaluate the management from both perspectives. In a word, by integrating the dimension of earnings management risk, the model will provide more in-depth information to both the management and the stakeholders and allow them to see the real picture of a company's performance and how it looks in the eyes of the other party, which will affect the decisions of management in a way that will improve the business operations of a company in the long term.

6.5 Methodologies and Key Findings

To develop the financial warning model, we have conducted the following analyses:

First, we use a sample of listed companies on Chinese stock markets to establish an index system by introducing relevant financial indicators and nonfinancial indicators. This is in accordance with those studies that suggest that a firm's overall performance may be reflected by its financial indicators and nonfinancial indicators (Elloumi and Gueyie 2001; Wilkins 1997; Wang and Ji 2006). For example, besides the traditional financial ratios, we integrate nonfinancial indicators such as the manager's education background, business diversification, and stock market performance (Table 6.1).

Second, we perform the K-S test and classify all indexes into two groups: one group that follows normal distribution and the other one that does not follow the normal distribution. We then use T-test to determine the significance level of indexes

Table 6.1 Definition of variables

General category	Subcategory	Symbol	Name	Description	
Dependent variable	Financial distress	(Y1, Y2)	The status of financial risk (MFR or EMR)	When the company is listed as ST or *ST, Y1 = 1 and 0 otherwise; when company is punished for violating security rules, Y2 = 1 and 0 otherwise	
Financial index	Short-term solvency	X1	Current ratio	Current assets/current liabilities	
		X2	Quick ratio	(Current assets – inventory)/current liabilities	
		X3	Conservative quick ratio	(Net cash + short-term securities + account receivables)/current liabilities	
		X4	Cash ratio	(Monetary capital + securities)/current liabilities	
		X5	Working capital ratio	(Current assets – current liabilities)/current liabilities	
	Cash flow sufficiency	X6	Working capital to total assets' ratio	Working capital to total assets' ratio	(Current assets – current liabilities)/total assets
		X7	Working capital to total net worth ratio	Working capital to total net worth ratio	(Current assets – current liabilities)/net assets
		X8	Working capital	Working capital	Current assets – current liabilities
		X9	Cash flow to interest ratio	Cash flow to interest ratio	Cash flows from operations/interest expense
		X10	Ratio of cash flow	Ratio of cash flow	Cash flows from operations/current liabilities
		X11	Cash to matured debt	Cash to matured debt	Cash flows from operations/current debt
		X12	Debt security ratio	Debt security ratio	Cash flows from operations/total liability
		X13	Cash to revenue ratio	Cash to revenue ratio	Cash flows from operations/operating income
		X14	Cash to total profit ratio	Cash to total profit ratio	Cash flows from operations/total profit
		X15	Surplus cash ratio	Surplus cash ratio	Cash flows from operations/net profit
		X16	Operating cash flows per share	Operating cash flows per share	Cash flows from operations/common stock outstanding shares
		X17	Cash flows per share	Cash flows per share	Net cash flows/total shares

(continued)

Table 6.1 (continued)

General category	Subcategory	Symbol	Name	Description	
	Long-term solvency	X18	Asset-liability ratio	Total liabilities/total assets	
		X19	Interest ratio	EBIT/interest expense	
		X20	Earnings before interest, tax, and amortization to debt ratio	Earnings before interest, tax, amortization/total liability	
		X21	Debt to equity ratio	Total debt/equity market price	
		X22	Equity to debt ratio	Total equity/total liability	
		X23	Equity ratio	Total equity/total assets	
		X24	Liquidity ratio	Current assets/total assets	
		X25	Fixed assets ratio	Fixed assets/total assets	
		X26	Current liabilities ratio	Current liabilities/total liabilities	
		X27	Long-term debt ratio	Long-term liabilities/total liabilities	
		Efficiency	X28	Accounts receivable turnover ratio	Sales/accounts receivable
			X29	Inventory turnover ratio	Sales/inventory
			X30	Working capital turnover ratio	Sales/working capital
			X31	Fixed-asset turnover ratio	Sales/fixed assets
	X32		Total asset turnover ratio	Sales/total assets	
	Profitability		X33	Operating profit ratio	Operating profit/sales
		X34	Net profit ratio	Net profit/sales	
		X35	Assets' returns	(Total profit + interest expense)/total assets	
		X36	Return on asset (ROA)	Net profit/total assets	
		X37	Return on equity (ROE)	Net profit/total equity	
		X38	Return on capital	(Net profit + interest expense)/(total assets - current liabilities + notes payable + short-term debt + long-term debt due within 1 year)	

Nonfinancial index	Shares' value	X39	Earnings per share	Net profit/total shares
		X40	Price to earnings ratio	Market value per share/earnings per share
		X41	Price to book value	Market value per share/net assets per share
		X42	Tobin Q value	Market value of total assets/replacement cost
	Development capacity	X43	Capital appreciation ratio	Beginning equity/ending equity
		X44	Capital accumulation ratio	(Beginning equity – ending equity)/beginning equity
		X45	Growth ratio of fixed assets	(Beginning fixed assets – ending fixed assets)/beginning fixed assets
	Leverage	X46	Growth ratio of total assets	(Ending total assets – beginning total assets)/beginning fixed assets
		X47	Growth ratio of net profit	(Ending net profit – opening net profit)/opening net profit
		X48	Financial leverage	(Total profit + interest expense)/total profit
Corporate governance	Internal governance variables	X49	Operating leverage	(Total profit + interest expense) annual rate/revenue annual rate
		X50	Numbers of board meeting	Numbers of board meeting in 1 year
		X51	Numbers of supervisors' meeting	Numbers of supervisors' meeting in 1 year
		X52	Numbers of stockholders' meeting	Numbers of stockholders' meeting in 1 year
		X53	Whether the CEO is the chairman of the board of directors	1 for yes, 0 otherwise
		X54	Top three executives' total salary	The sum of compensations of top three senior management personnel
	External governance variables	X55	Numbers of committees	Numbers of committees
		X56	Attendance of shareholders' meeting (%)	Shares held by the shareholders present at the annual general shareholders' meeting/total equity

(continued)

Table 6.1 (continued)

General category	Subcategory	Symbol	Name	Description
Equity structure	Equity structure	X57	State-owned shares' rate (%)	State-owned shares/total shares
		X58	Legal person shares' rate (%)	Legal person shares/total shares
	Ownership concentration	X59	Percentage of executives' holdings (%)	Shares owned by senior management/total shares
		X60	Percentage of the largest shareholder (%)	Shares owned by the largest shareholder/total shares
		X61	Z index	Shares owned by the largest shareholder/the total shares of the second largest shareholder
		X62	Percentage of top ten shareholders' holdings (%)	Shares owned by top ten shareholders/total shares
Board variables	X63	Numbers of directors	Numbers of directors	
	X64	Numbers of independent directors	Numbers of independent directors	
	X65	Numbers of supervisors	Numbers of supervisors	
Company changes variables	X66	Whether the chairman of the board or CEO changed	1 for yes, 0 otherwise	
	X67	Whether the equity structure changed	1 for yes, 0 otherwise	
Managers' education background	X68	Equity change percentage (%)	Changes in equity/total shares	
	X69	Education background	The average of managers' academic degree	
Diversification degree	X70	Numbers of main business industry	Numbers of industry contained in main business income	
Stock market performance	X71	Share turnover ratio	Total shares in each trade/total outstanding shares	
	X72	Beta coefficient	$\beta_i = \frac{\text{Cov}(R_i, R_m)}{\text{Var}(R_m)}$ R_i represents the returns of security i , R_m represents the returns of the market portfolio, $\text{Cov}(R_i, R_m)$ represents the covariance between stock returns and the market portfolio returns, $\text{Var}(R_m)$ represents variance of the market portfolio returns	

and use Man–Wails test to identify the significance level of those indexes that do not follow normal distribution. Those indexes that appear to be significant will be carried forward to the next step.

Third, in order to reduce the complexity of financial warning analysis, the difficulty of data collection, and the possibility of multicollinearity issue, we use principal component analysis to decrease the dimension of indicators and get a more streamlined indicator system.

Fourth, we use the typical linear discriminant function to establish a two-dimensional financial warning model with the streamlined indicator system.

Lastly, we use the linear discriminant function to calculate the target companies' scores and based on which to classify sample companies into the two-dimensional financial risk diagram (Fig. 6.1). We then determine the group that a company belongs to based on the distance from the position of the sample firm to the group centroids.

6.6 Illustrative Examples, Cases, and Mapping

We use Chinese listed companies as examples and take the data in year T-1 to establish the linear discriminant function.

Firstly, we use special treatment (“ST”) as our proxy for the real financial risk and choose those companies with all necessary data and those who have been public companies longer than 5 years. After deleting those companies in the financial industry and real estate industry, we got 207 ST companies from 2007 to 2013 as our research sample.

Secondly, based on the definition of earnings management discussed previously, we selected 253 listed companies as our sample firms with risk of earnings management from 2007 to 2013, using the data published by the China Securities Regulatory Commission. Eight types of financial irregularities are considered to be the indicators of earnings management, which include fictitious profits, fictitious assets, false descriptions (misleading statements), delayed disclosures, major omissions of information, false disclosures, illegal guarantees, and general improper accounting treatments.

Combining the above two groups of samples, there are 56 companies in group (1, 1) which have both real financial risk and earnings management risk at the same time. Overall, there are 56 sample firms in group (1, 1), 151 sample firms in group (1, 0), and 197 sample firms in group (0, 1).

We then select 207 companies matched on industry and size with the previous sample and include it as the paired sample which belongs to group (0, 0).

After some statistical treatments, we obtained the “Functions at group centroids” (see Table 6.2) and “two-dimensional financial risk schematic diagram” (see Fig. 6.2). After calculating the predicted values of samples in years T-1, T-2, T-3, and T-4 by the linear discriminant function and comparing to the actual results, we find that the predictability of our model is of great effectiveness. Tables 6.3, 6.4, 6.5, and 6.6 show the accuracy of prediction from T-1 to T-4.

Table 6.2 Functions at group centroids

State	Function	
	1	2
1	-1.389	.077
2	.300	-1.096
3	.628	.835
4	2.116	-.266

Unstandardized canonical discriminant functions evaluated at group means
 State indicates different types of firms, as 1 for group (0, 0), 2 for group (0, 1), 3 for group (1, 0), and 4 for group (1, 1). Function1 and function 2 mean the horizontal axis score and vertical axis score, respectively, from the discriminant functions, and they together decide the locations of these four types in the coordinate system

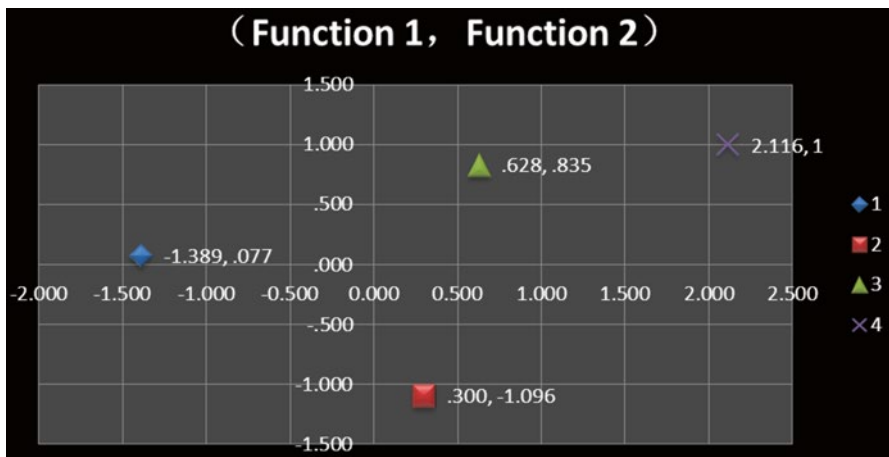


Fig. 6.2 Two-dimensional financial risk schematic diagram

Table 6.3 Classification results for year T-1

Classification results ^{a,c}		State	Predicted group membership				Total
			1	2	3	4	
Original	Count	(0, 0)	187	10	10	0	207
		(0, 1)	11	130	4	6	151
		(1, 0)	3	8	175	11	197
		(1, 1)	0	1	5	50	56
Cross validated ^b	Count	(0, 0)	180	15	12	0	207
		(0, 1)	11	128	4	8	151
		(1, 0)	3	9	169	16	197
		(1, 1)	0	1	5	50	56

^a88.7 % of original grouped cases correctly classified

^bCross validation is done only for those cases in the analysis. In cross validation, each case is classified by the functions derived from all cases other than that case

^c86.3 % of cross-validated grouped cases correctly classified

Table 6.4 Prediction results for year T-2

Original state	Predicted group membership					Correctly classified
	(0, 0)	(0, 1)	(1, 0)	(1, 1)	Total	
(0, 0)	173	10	9	0	192	86.2 %
(0, 1)	9	128	7	7	151	
(1, 0)	7	6	130	15	158	
(1, 1)	0	3	4	49	56	

Table 6.5 Prediction results for year T-3

Original state	Predicted group membership					Correctly classified
	(0, 0)	(0, 1)	(1, 0)	(1, 1)	Total	
(0, 0)	132	18	13	9	172	77.8 %
(0, 1)	18	115	7	10	150	
(1, 0)	6	9	107	15	137	
(1, 1)	0	2	7	46	55	

Table 6.6 Prediction results for year T-4

Original state	Predicted group membership					Correctly classified
	(0, 0)	(0, 1)	(1, 0)	(1, 1)	Total	
(0, 0)	122	23	11	4	160	75.2 %
(0, 1)	19	110	12	8	149	
(1, 0)	5	9	98	18	130	
(1, 1)	2	3	8	40	53	

6.7 Applications of the Model

According to the above analysis, the corporate financial risk can be divided into real financial risk (risk of financial distress) and earnings management risk, and different information users have different preferences which make it necessary to divide users into subgroups. We divide financial information users into two groups: those who use only one type of risk information will be classified into the group of “single information demanders,” and those who need both types of risk information will be grouped as the “comprehensive information demanders.”

6.7.1 Applications of the Model for Single Information Demanders

Based on prior studies, we have integrated various qualitative variables into our models in order to estimate real financial risk and earnings management risk. It is possible that regular financial statement users cannot judge a firm’s financial health

by using similar empirical analyses approach on their own because of their limited knowledge, lack of experiences in financial analysis, and insufficient understanding of the company's financial position. Considering that, a thorough understanding of all information of a company will be necessary, and we use a two-dimensional model to integrate such information and to help financial statement users to make decisions.

We assume in this study that most auditors and regulators will focus more on earnings management risk information, while managers focus more on financial risk information, and thus both will be classified as single information demanders in our study. These information users can use the financial early warning model proposed in this study to determine which category ((1, 1), (0, 1), (1, 0), (0, 0)) a company belongs to.

For those managers who focus on the real financial risk, they can use the two-dimensional model and focus more on results (1, 1) and (1, 0), based on which then to use traditional financial early warning models (such as Z-score model) to do further analyses and determine the company's financial conditions more effectively.

For auditors and regulators who focus more on earnings management risk, they should pay more attention to those enterprises that are identified as (1, 1) or (0, 1) by the two-dimensional model and perform further analyses on the causes and degrees of earnings management of investigated firms.

6.7.2 Applications of the Model for Comprehensive Information Demanders

Most people will use financial statements to perform a comprehensive analysis of a firm's financial risk and earnings management risk due to that they need to avoid both. Although people would like to avoid both risks, their tolerance levels for these two risks are different, and we need to distinguish between the two when discussing the application of the model. We developed a model to measure a firm's overall financial risk to address this issue. We use two variables Y1 and Y2 to distinguish the need of users for two risks, respectively. Y1 refers to real financial risk while Y2 refers to earnings management risk. Assuming a linear relationship, we can use the following formula to evaluate the overall financial risk:

$$Y = f(Y1, Y2) = A_1 Y1 + A_2 Y2 \quad (6.1)$$

where

Y represents a user's assessment of a firm's overall financial risk.

Y1 represents real financial risk, associated with the results of operation and management of enterprises.

Y_2 represents earnings management risk, associated with managerial behavior of earnings management.

A_1 and A_2 represent the weights that users put on the financial risk and earnings management risk, in other words, the importance of these risks to the users.

Then, we use a utility function to measure the expected utility of different preference combination of risk information and list as below:

$$U = f(Y) = AY^R \quad (6.2)$$

where

U represents the expected utility.

R represents the preference coefficient for different risks: when the $R=1$, users are considered as risk-neutral investors; when $R>1$, users are considered as risk-seeker investors; when $R<1$, users are considered as risk-averse investors.

Integrating formulas 6.1 and 6.2, we obtained the following formula:

$$U = f(Y) = AY^R = (A_1Y_1 + A_2Y_2)^R \quad (6.3)$$

where

A represents the coefficient matrix, $A=(A_1,A_2)$.

Y represents the dependent variable matrix, $Y=(Y_1,Y_2)^T$.

When users have insufficient knowledge of real financial risk or do not consider it to be an important factor, such as auditors or regulators, A_1 equals 0, and $U=(A_2Y_2)^R$, which becomes an earnings management risk model. On the other hand, when users have insufficient knowledge of earnings management risk or believe it not important, such as top management of a firm, A_2 becomes 0, and $U=(A_1Y_1)^R$, which is degraded to an early warning model for real financial risk.

In a summary, this study established a two-dimensional early warning model of financial risk; it integrates the risk of earnings management into the financial risk prediction model and intends to help users to assess a firm's financial health more effectively. We also provide guidance on how to apply the model and use it as a tool for identifying different types of risks and thus evaluate the overall financial risk.

6.8 Concluding Remarks

Although financial risk and earnings management risk have been widely researched, prior research seldom investigates the compound effects of both risks; our study introduces the earnings management risk as a second dimension into the financial early warning model and builds a model with real financial risk as the first dimension and earnings management risk as the second dimension. The model can solve

the common “data distortion” problem in financial warning model to certain extent after considering the earning management impact that has pervasive effects on the quality of financial information. Our model provides a more reliable tool of risk assessments for different information users such that to facilitate their decision-making. Future research could focus on the relationship between real financial risk and earnings management risk in order to improve the effectiveness of early warning models of financial risk and to investigate the causes of the overall financial risk.

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Chapter 7

New Consumers' Perspective in Insuring Earthquakes

Jiaojun Ge, Jie Zhao, and Shoaib Nisar

Abstract Ever since the “Wenchuan earthquake” in May 12, 2008, there are some other earthquakes every year in China. China seems at the stage with active earthquakes. However, there is nothing the government can do to prevent such natural disasters. Instead the government can only try to issue alert information and to build an efficient afterward recovering system. Earthquake insurance could be an effective way to provide additional recovering money besides government funds. But the question is whether consumers are willing to buy and pay for earthquake insurance if government is not paying. Therefore, this chapter is to investigate Chinese residents' preferences for earthquake insurance, especially to analyze their willingness to accept and willingness to pay for earthquake insurance. Previous studies have shown that risk perception, social trust, and consumers' characteristics have significant impact on consumers' earthquake insurance. Thus the measure of association was used to analyze Chinese consumers' preferences, followed by a short case for “Pearl River Delta” region in China. The data was collected through an online survey in Shenzhen, a core city in “Pearl River Delta” region. A total of 637 surveys were returned, and of those collected, 428 are valid. The results indicate that consumers are willing to buy and pay for earthquake insurance for higher-risk regions. However, for the lower-risk regions, government has to put more effort on increasing social trust for consumers. In addition, insurance companies need to provide earthquake property insurance product and earthquake life insurance product separately and together too according to consumers' different preferences.

Keywords China • Earthquake insurance • Consumer Preference • Willingness to pay (WTP) • Measure of association

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7.1 Introduction

After the “Wenchuan earthquake” in May 12, 2008, residents in China started to pay much more attention to all information related to earthquakes. Specifically, they concern the possibility of having another huge earthquake in China, especially in their own region. From May 12, 2008, to May 24, 2014, there are 11 earthquakes in China with magnitude over 4.0 including the 2010 Yushu earthquake and the 2013 Ya’an earthquake. It seems China is at the stage with active earthquakes. However, there is nothing the government can do to prevent such kind of natural disaster. Instead the government can only try to issue alert information and to build an efficient afterward recovering system. Earthquake insurance could be an effective way to provide additional recovering money besides government funds. Therefore, it is important for China to design acceptable but indeed helpful earthquake insurance for Chinese residents. Thus, to study the earthquake insurance from consumers’ perspective becomes crucial today. China central government announced to design an earthquake insurance system in Shenzhen and Yunan province first before that for a whole country.

The percentage of homeowners who have purchased earthquake insurance has declined over the years, both in California and across the United States. The question is: could the earthquake insurance be successful in China? If so, what should China do? Therefore, the objective of this chapter is to investigate Chinese residents’ preference for earthquake insurance, especially to analyze their willingness to accept and willingness to pay for insurance from insurance consumers’ demographics and to provide Chinese government and insurance companies very important policy implications and managerial implications.

7.2 Conceptual Overview

Whether a consumer decides to buy earthquake insurance or not could be affected by many factors. Especially, if consumers have existing experience of buying other types of insurance before (*pre_insurance*), they might tend to buy earthquake insurance too when this type of insurance is available. Of course, risk and social trust can also affect consumers’ earthquake insurance buying decisions.

7.2.1 Risk Perception

Lichtenstein et al. (1978) observed systematic bias in the judged frequency of lethal events. This finding emphasized the important role of investigating social risk perception and determination of the source of the error. A study by Johnson et al. (1993) showed that deformation in people’s risk perception and framing effects

existed in both the real world and in experimental researches and influenced consumers' decisions about insurance purchasing. People tended to buy more insurance against moderately high probability, small-loss events than low-probability, high-loss events (Slovic et al. 1977). The experiments conducted by Schoemaker and Kunreuther (1979) showed that people's limited abilities to deal with risk information and limited sensitivity to low-probability events and suggested future research on factors affecting insurance purchasing decisions. Understanding consumer characteristic affection on insurance decision and individuals' behaviors in various types of insurance is important for public and private sectors (Showers and Shotick 1994).

In the process of decision making, a strong assumption provided in Smith's (1968) standard insurance demand model argues that an individual can correctly predict the probability associated with all possible loss distribution. So far, the standard model cannot perfectly explain some specific behaviors on considering whether to buy insurance under uncertainty or about the probability or extent of catastrophe loss. In fact, the consideration on whether to adopt disaster loss mitigation measures can be attributed to what is called the "reflect effect" suggested by Kahneman and Tversky (1979). It indicates that the prediction of an individual's choices in dealing with risk will reflect around the current situations and the attitude of the decision maker toward risk perception (Schwartz and Hasnain 2002). Similarly, risk perception and selection play a vital role for efficient risk sharing in natural-catastrophe insurance and then the purchasing of individual (Jametti and von Ungern-Sternberg 2010), and willingness to pay will be also affected by risk perception. Wang et al. (2012) investigated people's risk perception into the analysis of people's insurance choice in China after the Wenchuan earthquake. After that, Ye and Wang (2013) explored risk attitude through a comparative experimental method and its implication to catastrophe insurance practice in China and found that uncertainty about the risk perception and risk mitigation when people are faced up with purchasing choice results in a tendency of ignorance and rejection. Therefore, if individuals perceived an earthquake before (Per_risk), there is a higher chance that they will buy earthquake insurance.

7.2.2 Social Trust

Dating back to the 1970s, an earlier report has showed that when residents discuss with friends, neighbors, and family members, the likelihood of purchasing natural disaster insurance could increase (Kunreuther 1978). Based on other earlier research, Kunreuther and Michel-Kerjan (2009) showed that when respondents heard that other people have bought insurance against catastrophe risks, they become encouraged to follow the same behaviors even without changing their thoughts about the risks they faced or knowing about the price of coverage. Social trust can also lead to premature cancelation of insurance policies after some years of coverage without making any claim of insured damage. Respondents observe and tend to follow the

behaviors of their neighbors and other people in social network when deciding whether to spend on mitigating the catastrophe risks they faced.

Focuses have been raised about the standard role of social trust and interdependencies. Kuran (1995) believes that social trusts are social artifacts that dissimulate individual true intentions and result in undesirable social outputs. In a similar way, Kunreuther and his colleagues (2009) argue that social interdependencies are likely to obstruct selection of effective risk mitigation choices and exacerbate the cognitive bias the individuals encounter.

Social trust is viewed in a more positive light in the study of adaptive institutions. Operating social networks can generate social assets and give impetus to collective action (Ostrom 2000). Networked relationships among members of community, media, and government, built on the rules of mutual trust and coactions, enable the sharing of knowledge, risk, and resources and can support recovery from natural disasters and the resulting economic shocks through mutual aids. Social trust and networks are generally deemed to be conducive to adapting communities to disaster risk and reducing their vulnerability (Pelling and High 2005; Nelson et al. 2007; Adger 2003), despite some counterevidence (Wolf et al. 2010). Affirmative empirical evidences exist in the literature of disaster risk management (Wong and Zhao 2001), but very few pertain to the purchase of catastrophe insurance specifically, let alone earthquake insurance. In this research, because of unpopularity and unfamiliarity among Chinese, we will not estimate the influence of neighbors' choice. So we just put our focus on four aspects, government information trust, social media information trust, agreement of earthquake insurance program, and satisfaction of government current policy.

Therefore, social trust can also lead to premature cancelation of insurance policies after some years of coverage without making any claim of insured damage. Therefore, four aspects of social trust were concentrated in our study, including government information trust about earthquake peril (Gover_Inform), social media information trust about earthquake peril (Media_Inform), agreement of earthquake insurance program (G_Policy), and satisfaction of government current policy (Mitigation).

If an individual has more trust in government and media, she/he would be more easily influenced by the "reputational externalities effect" of risk information (Zeckhauser 1996; Swim et al. 2009; Norgaard 2011). This effect forms a sense for the respondents to believe that the catastrophic loss would more likely occur at some future time. It then has a positive influence on the attitude toward buying insurance. A positive relationship between G_Policy and insurance purchase and willingness to pay is also expected. Browne and Hoyt (2000) suggested that the government's investment in earthquake protection is a substitute for insurance. If this is the case, the increased trust in government's artificial disaster prevention measures would decrease the willingness to buy insurance. The effect of Mitigation on insurance purchase is thus hypothesized as negative (Fig. 7.1).

Therefore, for different consumers, to calculate the measure of association could provide government and insurance company more accurate information on reducing risk perception and increasing social trust to increase the probability for consumers to buy and their willingness to buy for earthquake insurance.

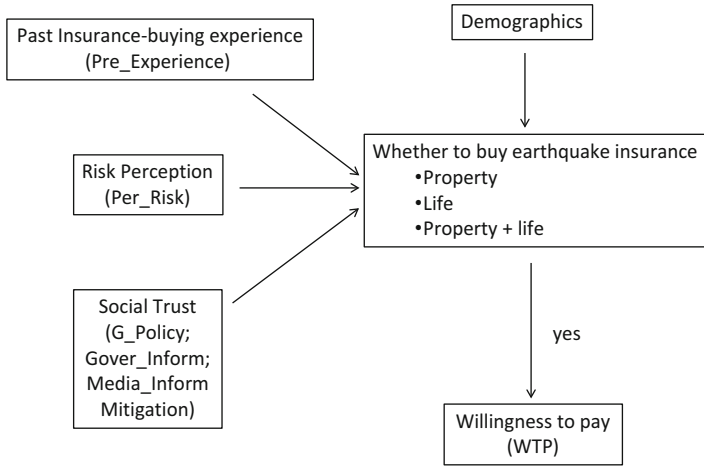


Fig. 7.1 Conceptual framework

7.3 Why It Concerns Management?

To build an efficient earthquake insurance system, it's very important how key stakeholders act within the system and outside the system. Among all stakeholders, the most important ones are government, insurance companies, and consumers. Therefore, to study from consumers' perspectives, it can provide insights on managerial implication for both government and insurance companies.

7.4 Key Statistical Insights

An online questionnaire survey was undertaken in the online survey platform named Wenjuanxing which is a professional research institution. Questionnaire was launched by randomly selected respondents in China to understand the attitude of respondents in dealing with earthquake risk and toward earthquake insurance. Six hundred and thirty-seven questionnaires were collected after 2 weeks. Invalid data was rejected (questionnaires which are invalid because of the screening questions), and 428 valid questionnaires were analyzed for the measure of association.

The results in Table 7.1 indicate that there is no association between consumers' WTP and consumers' pre-experience of buying any insurance; however, consumers' perceived risks are associated with their WTP. But consumers' decision on whether to buy earthquake insurance is statistically associated with both pre-insurance-buying experience and perceived risks. Thus, if consumers perceived the existence of earthquake risk, they are willing to buy and pay earthquake insurance. All demographic variables have been tested to see whether there exists measure of association between consumers' decision to buy insurance and WTP. The results

Table 7.1 The measure of association between variables

DC1	Pre_insurance			Per_Risk					
	0	1	Total	1	2	3	4	5	Total
0	51	50	101	10	59	21	9	2	101
	11.92	11.68	23.60	2.34	13.79	4.91	2.10	0.47	23.60
1	95	232	327	17	139	82	75	14	327
	22.20	54.21	76.40	3.97	32.48	19.16	17.52	3.27	76.40
	Likelihood = 15.2437 Pr = 0.000			Likelihood = 17.4635 Pr = 0.002					
DC2									
0	43	42	85	14	52	13	4	2	85
	10.05	9.81	19.86	3.27	12.15	3.04	0.93	0.47	19.86
1	103	240	343	13	146	90	80	14	343
	24.07	56.07	80.14	3.04	34.11	21.03	18.69	3.27	80.14
	Likelihood = 12.3152 Pr = 0.000			Likelihood = 38.9525 Pr = 0.000					
DC3									
0	39	37	76	10	44	16	4	2	76
	9.11	8.64	17.76	2.34	10.28	3.74	0.93	0.47	17.76
1	107	245	352	17	154	87	80	14	352
	25.00	57.24	82.24	3.97	35.98	20.33	18.69	3.27	82.24
	Likelihood = 11.6605 Pr = 0.001			Likelihood = 21.8012 Pr = 0.000					
WTP									
1	68	101	169	19	83	40	21	6	169
	15.89	23.60	39.49	4.44	19.39	9.35	4.91	1.40	39.49
2	58	127	185	6	82	43	46	8	185
	13.55	29.67	43.22	1.40	19.16	10.05	10.75	1.87	43.22
3	13	40	53	2	26	13	10	2	53
	3.04	9.35	12.38	0.47	6.07	3.04	2.34	0.47	12.38
4	7	14	21	0	7	7	7	0	21
	1.64	3.27	4.91	0.00	1.64	1.64	1.64	0.00	4.91
	Likelihood = 5.6801 Pr = 0.128			Likelihood = 24.9728 Pr = 0.015					

Note: DC1 is consumers’ decision to buy earthquake property insurance; DC2 is consumers’ decision to buy earthquake life insurance; DC3 is consumers’ decision to buy both earthquake property and life insurances. WTP is consumers’ willingness to pay for earthquake insurance. Pre_insurance is pre-insurance-buying experience. Per_Risk is consumers’ perceived level of a major earthquake damage

indicate that all demographics are not statistically significant for a very small probability event, like earthquake.

However, the results in Tables 7.2 and 7.3 show that there exiting measure of association between consumers’ decision on buying earthquake insurance, and consumer’s social trust in all four different aspects, including the level of trust in government’s information about earthquake risk, the level of the satisfaction with government’s earthquake prevention constructions, the level of trust in social media’s information about earthquake risk, and the level of agreement with government’s implementation of the earthquake insurance program. The same significant measure of association goes to WTP and consumer's social trust. Therefore, to

Table 7.2 The measure of association between variables

	Gover_Inform						Mitigation					
DC1	1	2	3	4	5	Total	1	2	3	4	5	Total
0	7	19	44	27	4	101	7	12	36	39	7	101
	1.64	4.44	10.28	6.31	0.93	23.60	1.64	2.80	8.41	9.11	1.64	23.60
1	3	43	125	136	20	327	4	27	102	167	27	327
	0.70	10.05	29.21	31.78	4.67	76.40	0.93	6.31	23.83	39.02	6.31	76.40
	Likelihood=17.3003 Pr=0.002						Likelihood=12.2497 Pr=0.016					
DC2												
0	8	19	37	19	2	85	6	10	30	33	6	85
	1.87	4.44	8.64	4.44	0.47	19.86	1.40	2.34	7.01	7.71	1.40	19.86
1	2	43	132	144	22	343	5	29	108	173	28	343
	0.47	10.05	30.84	33.64	5.14	80.14	1.17	6.78	25.23	40.42	6.54	80.14
	Likelihood=31.4809 Pr=0.000						Likelihood=9.6401 Pr=0.047					
DC3												
0	6	22	34	13	1	76	4	11	30	27	4	76
	1.40	5.14	7.94	3.04	0.23	17.76	0.93	2.57	7.01	6.31	0.93	17.76
1	4	40	135	150	23	352	7	28	108	179	30	352
	0.93	9.35	31.54	35.05	5.37	82.24	1.64	6.54	25.23	41.82	7.01	82.24
	Likelihood=37.5468 Pr=0.000						Likelihood=10.3546 Pr=0.035					
WTP												
1	9	32	72	49	7	169	8	22	48	77	14	169
	2.10	7.48	16.82	11.45	1.64	39.49	1.87	5.14	11.21	17.99	3.27	39.49
2	1	21	68	84	11	185	2	9	64	99	11	185
	0.23	4.91	15.89	19.63	2.57	43.22	0.47	2.10	14.95	23.13	2.57	43.22
3	0	8	21	18	6	53	0	7	16	23	7	53
	0.00	1.87	4.91	4.21	1.40	12.38	0.00	1.64	3.74	5.37	1.64	12.38
4	0	1	8	12	0	21	1	1	10	7	2	21
	0.00	0.23	1.87	2.80	0.00	4.91	0.23	0.23	2.34	1.64	0.47	4.91
	Likelihood=31.9163 Pr=0.001						Likelihood=23.6472 Pr=0.023					

Note: Gover_Inform is the level of trust in government's information about earthquake risk. Mitigation is the level of the satisfaction with government's earthquake prevention constructions

encourage consumers to buy earthquake insurance and increase their willingness to pay (WTP) for earthquake insurance, the government should try to publish updated earthquake information through trustful social medias, to update infra structures which are more earthquake prevented, and to design more easy to land earthquake insurance policies.

7.5 Illustrative Examples, Cases, and Mapping

The Southeast China Coastal fold belt seismic zone poses great seismic hazards to the Hong Kong-Shenzhen-Guangzhou metropolitan area, the so-called "Pearl River Delta" region. These coastal regions are the economic backbone of China and

Table 7.3 The measure of association between variables

	G_Policy						Media_Inform					
DC1	1	2	3	4	5	Total	1	2	3	4	5	Total
0	3	10	29	50	9	101	7	9	47	37	1	101
	0.70	2.34	6.78	11.68	2.10	23.60	1.64	2.10	10.98	8.64	0.23	23.60
1	1	9	63	196	58	327	6	30	113	160	18	327
	0.23	2.10	14.72	45.79	13.55	76.40	1.40	7.01	26.40	37.38	4.21	76.40
	Likelihood=20.9973 Pr=0.000						Likelihood=15.7343 Pr=0.003					
DC2												
0	4	13	30	34	4	85	4	13	38	30	0	85
	0.93	3.04	7.01	7.94	0.93	19.86	0.93	3.04	8.88	7.01	0.00	19.86
1	0	6	62	212	63	343	9	26	122	167	19	343
	0.00	1.40	14.49	49.53	14.72	80.14	2.10	6.07	28.50	39.02	4.44	80.14
	Likelihood=58.8627 Pr=0.000						Likelihood=17.4608 Pr=0.002					
DC3												
0	3	13	29	29	2	76	6	10	34	26	0	76
	0.70	3.04	6.78	6.78	0.47	17.76	1.40	2.34	7.94	6.07	0.00	17.76
1	1	6	63	217	65	352	7	29	126	171	19	352
	0.23	1.40	14.72	50.70	15.19	82.24	1.64	6.78	29.44	39.95	4.44	82.24
	Likelihood=61.0427 Pr=0.000						Likelihood=18.7615 Pr=0.001					
WTP												
1	3	12	49	86	19	169	10	20	66	69	4	169
	0.70	2.80	11.45	20.09	4.44	39.49	2.34	4.67	15.42	16.12	0.93	39.49
2	1	5	33	118	58	185	1	16	69	89	10	185
	0.23	1.171	7.71	27.57	6.54	43.22	0.23	3.74	16.12	20.79	2.34	43.22
3	0	2	7	27	17	53	2	2	19	26	4	53
	0.00	0.47	1.64	6.31	3.97	12.38	0.47	0.47	4.44	6.07	0.93	12.38
4	0	0	3	15	3	21	0	1	6	13	1	21
	0.00	0.00	0.70	3.50	0.70	4.91	0.00	0.23	1.40	3.04	0.23	4.91
	Likelihood=29.1689 Pr=0.004						Likelihood=20.9841 Pr=0.051					

Note: Media_Inform is the level of trust in social media’s information about earthquake risk. G_Policy is the level of agreement with government’s implementation of the earthquake insurance program

Southeastern Asia. Although the seismicity is low, the study of earthquake and its prevention and control is very important in this area because of its highest population density, economic development, and contribution in the overall GDP of China. A moderate earthquake may cause high casualties and economic losses in this region as compared to other less developed and low-population Western parts of China (Lanbo 2001).

The Pearl River Delta is a densely populated metropolitan area that is home to more than 42 million inhabitants. Covering a territory of some 20,600 km², it comprises the urban districts of Hong Kong, Shenzhen, Dongguan, Macau, and Guangzhou. Situated in one of the world’s most disaster-prone regions, floods and typhoons put more people at risk than in any other metropolitan areas in the world.

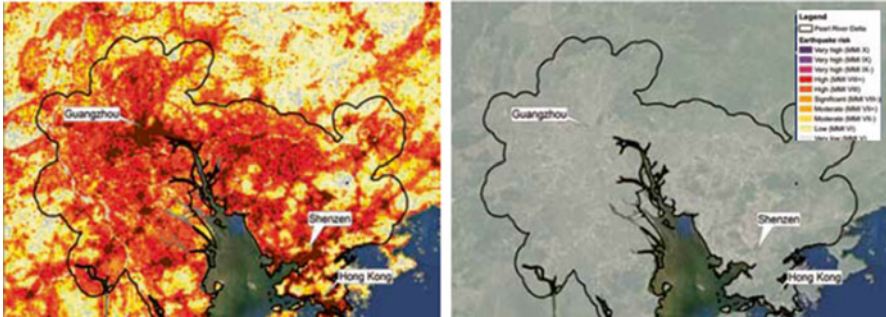


Fig. 7.2 Population density and earthquake risk of Pearl River Delta, China (Source: Eastview LandScan2011™ and GSHAP)

This region is one of China's main economic centers. However this region has been evaluated with low risk with earthquakes (Swiss Re 2014) (Fig. 7.2).

Thus, does it mean that there is no need for this region to have earthquake insurance? On August 26, 2014, the 6.0 magnitude earthquake that struck the San Francisco Bay area early Sunday is estimated to have caused \$1 billion in economic losses, according to the US Geological Survey. Only about 12 % of California homeowners have earthquake insurance coverage (Lu 2014). In areas hardest hit by this Sunday's quake, such as Napa, fewer than 6 % of homeowners have earthquake coverage, according to the most recent data from the California Earthquake Authority.

Therefore, for a region with higher population intensity and lower risk for earthquakes, it's very important to have more consumers to buy earthquake insurance. Because if an earthquake happens, it can cause severe loss in billions and requires huge amount of money for afterward recovering. Earthquake insurance can help to provide some earthquake funds in case of emergency.

7.6 Concluding Remarks

Earthquake is active in China these days. It is urgent to build an effective insurance system for all regions inside China. From the analysis of both consumers' perspective and current conditions, it shows that is necessary to build an efficient earthquake insurance system in China. For the region with higher risk of earthquakes in China, the only thing that government needs to do is to support insurance companies to have earthquake insurance products, and then consumers will buy.

However, for the region with lower risk of earthquakes in China, the government has to put more effort on increasing social trust for consumers, such as more accurate information about earthquake prediction and more information on social networks about the earthquakes, especially to have some program to encourage consumers to buy earthquake insurance. In addition, insurance companies need to

provide earthquake property insurance product and earthquake life insurance product separately and together too according to consumers' different preferences. Therefore, further study about consumers' willingness to pay for earthquake insurance product under uncertainty should be investigated.

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Chapter 8

Corporate Eleemosynary Behavior

Fei Wang and Jiuchang Wei

Abstract Companies are using their eleemosynary programs more as strategic tools to improve their social reputations. In this chapter, the editor firstly provided his overview on China's corporate responses to the Wenchuan earthquake and, secondly, the diversity of corporate perspectives on the motivation of eleemosynary behavior. Sampling on 908 listed companies, the determinants of corporate eleemosynary behaviors were examined. In a summary, medium and small companies mostly donated 1.5 million RMB each, and large listed companies each donated 10.5 million RMB; ownership, education, and employment duration of corporate leaders have a positive effect on donation for the disaster, while company asset has a negative effect; total assets, debt asset ratio, ownership, and education of corporate leaders are negatively linked to donation size. These results can be used to help decision-makers to predict competitors' decisions on donation amount when responding to a disaster and understand the relationship between chief executive officer and business decision-making. For the board members or senior executives, they should be aware of the influence of presidential transition on corporate eleemosynary activities because such change may affect a firm's reputation and image. The two levels of donation sizes allow decision-makers to select the proper donation amount, consistent with the financial performance at the strategic level, which will be tremendously helpful to implement the differentiation strategy for the donation competition. Meanwhile, with the increasing number of corporate eleemosynary activities, it is better for the Chinese government to construct the supervision mechanism to prevent against the donation fraud.

Keywords Disaster donation • Eleemosynary behavior • Social responsibility • China • Listed firm

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8.1 Introduction

In wake of the recent natural disasters, the impact damage of earthquakes becomes more serious (Alexander 2006). The sub-event crises triggered by the influence of earthquakes increase the difficulties for earthquake planning and preparedness because the impact damage seems random in the severity of damage and the time and the place of occurrence. There is an increasing awareness among researchers that China's earthquake events are not managed efficiently and effectively under high risk, especially for the unconventional emergency event. Public's psychological conditions make huge differences, and risk perceptions change dramatically. As a result, the application of advanced theories and practice achievement into earthquake risk management must be developed in China. All these devastating disasters occurred in China also made apparent needs to understand how to better prepare for and respond to earthquakes.

China is one of the countries most affected by earthquakes in the world. According to the figures from China's National Bureau of Statistics, the earthquake caused direct economic loss of 96,850 billion RMB and 476,100 casualties in the past 13 years. There are 374 earthquakes in the past decade in China, among which 43 large-scale earthquakes (the earthquake's magnitude is bigger than 6) occurred. China had 4 of the top 10 world's most fatal earthquakes, including the 1556 Shaanxi earthquake, the 1920 Haiyuan earthquake, the 1976 Tangshan earthquake, and the 2008 Wenchuan earthquake. By comparison, the most serious hazard is the 2008 Wenchuan earthquake that took lives of 69,227 and caused 374,643 injured, 17,923 missing, and 4.8 million people homeless (Ministry of Civil Affairs of China 2008). Chinese people and the government immediately expressed condolences to victims and actively engage in humanitarian disaster relief. In total, 65.996 billion RMB in cash was received from domestic and abroad, and 10.716 billion RMB had been donated by charity organizations by April 30, 2009 (Ministry of Civil Affairs of China 2009).

In the aftermath of the Wenchuan earthquake, governments and NGOs (nongovernmental organizations) positively engaged in disaster relief. Some provided cash and resource (such as food, water, and some other relief supplies), and some provided victims with technology or medical workers to increase the possibility of surviving from the disaster. Among the donors, companies are playing an increasing important role in disaster relief. As expected, a good deal of private firms and listed companies joined this donation campaign. As shown in Table 8.1, their donation size makes huge differences. For example, China Vanke Company Limited donated 10 million RMB in cash, China Unicom 3.2 million RMB, and China National Petroleum 2.3 million RMB. It seems that some listed companies are very generous, while some were very stingy. After the Wenchuan earthquake happened, what were the corporate responses to the disaster? What determined the responses? In this chapter, we try to explore corporate eleemosynary behaviors by investigating 908 listed firms' responses to the Wenchuan earthquake.

Table 8.1 Twenty-five listed companies which donated the most in the aftermath of the Wenchuan earthquake

Firm	Stock code	Total donation (Thousand RMB)	Net profit (Million RMB)	Total asset (Million RMB)
China Vanke Co., Ltd.	000002	10,000	2,306.67	111,101.24
Industrial and Commercial Bank of China	601398	8726	64,879.00	9,399,960.00
China Construction Bank	601939	7158	58,692.00	7,057,706.00
Bank of China	601988	6400	44,501.00	6,487,313.00
Ping An Insurance	601318	6000	7,310.00	643,606.00
Suning	002024	5500	1,145.60	24,081.18
Bank of Communications	601328	5200	15,593.00	2,426,366.00
Xugong	000425	3372	1.02	3,602.93
China Unicom	600050	3200	4,491.07	142,624.06
Xin'an	600596	3050	1,064.68	4,084.37
Luzhou Laojiao	000568	3000	741.35	4,102.63
Wu Liang Ye	000858	2800	1,308.15	12,486.78
China Railway Construction	601186	2756	1,508.42	205,527.87
Xi Bu Kuang Ye	601168	2750.7	769.28	16,771.90
Youngor	600177	2700	2,041.78	34,142.16
Jian Kang Yuan	600380	2538	47.23	5,932.85
China National Petroleum	601857	2300	55,297.00	1,059,396.00
Gree Electric Appliances	000651	2052	1,015.30	26,949.48
Ha Yao	600664	2000	376.90	8,797.97
Zoomlion Heavy Industry Science and Technology	000157	2000	908.72	13,709.88
Shanghai Zhenhua Port Machinery	600320	2000	1,021.17	40,265.74
Ansteel Group Corporation	000898	1875	5,980.00	89,822.00
Industrial Bank	601166	1761	6,543.97	916,963.91
Shanghai Pudong Development Bank	600000	1700	6,374.79	1,002,610.52
China Merchants Bank	600036	1645	13,245.00	1,395,791.00

The data is acquired from their financial statement in Shanghai Stock Exchange (<http://www.sse.com.cn>) and Shenzhen Stock Exchange (<http://www.szse.cn>) of China

8.1.1 Diversity of Perspectives

Corporate donation behavior is one way of exhibiting social responsibility (Dean 2003, 2004). Especially for the listed firms, they are expected to donate more because of their stronger economic capacity. Expectancies are primarily based upon characteristics of the communicators (Beth and Stephen 1999). Here, donor firms and stakeholders are the communicators, whose characteristics have influences on

public's expectations for corporate eleemosynary behavior. Corporate characteristics include total asset, debt asset ratio, turnover, net profit, growth rate of real operation profit, net cash flows from operating activities, increase in cash and cash equivalents, etc (Brammer and Millington 2006). For the firms with differential characters such as total asset and net profit, public's levels of expectation would make huge differences obviously. Take the donation size for example; the firm with larger total asset and higher net profit may donate more than those smaller firms (Crampton and Patten 2008). Otherwise, the lower fit of public expectations will generate lower level of public attention and negative emotional responses (Burgoon et al. 2002; Greifeneder et al. 2011), hence decrease the possibility of building celebrity. So, the nature of corporate governance affects greatly the public expectation concerning disaster donation. However, the reality does not match the expectation. For example, the donation of China Vanke is much larger than China National Petroleum. It's noted that China National Petroleum is the biggest firm which the total asset reaches up to 1,059,396 million RMB in 2008. In addition, faced with change and uncertainty, some firms take novel and nonconforming actions to establish new competitive positions and gain competitive advantages (Ferrier et al. 1999). Researches on the corporate eleemosynary behaviors argued that corporate disaster donation can also be used to enhance a company's market position and media visibility (Rindova and Fombrun 1999; Porter and Kramer 2002; Rindova et al. 2006; Pfarrer et al. 2010). Once a firm takes nonconforming actions, such as donating much more than its competitors and public expectation, it's useful for building firm celebrity and increasing firms' media visibility. So, companies may be motivated to donate by building firm celebrity. From diverse perspective of management, we propose the following questions: Why such corporations did not shoulder more social responsibility and which factors determine corporate disaster donation in China? In other words, what is the corporate donation motivation?

8.2 Conceptual Overview

It's generally accepted that firm size is positively correlated with corporate charity (Stanwick and Stanwick 1998; Seifert et al. 2003). A number of studies on corporate social responsibility (CSR) and corporate ethics have suggested relationships between corporate responses to disaster relief and firm size. A good fit between prior expectancy, knowledge, actions, and competencies of a company and a given social initiatives can reinforce the public perception and strengthen the company's market position (Floyd et al. 1999). In order to meet the public's expectancies, companies have the incentive to act high-fit initiatives as a reaction to a natural disaster. Larger companies are more likely to be scrutinized by the public and media, which may further contribute to the promotion of corporate charity. So, we suppose that larger companies have higher probability of engagement in charitable relief and more likely to donate more.

Disaster aid is fundamentally influenced by the enterprise's financial performance because the motivation is philanthropic and eleemosynary (Benthall 1993; Brammer and Millington 2004; Patten 2008; Gao et al. 2012; Muller and Kraussl 2011; Zhang et al. 2009). Based on the survey of 56 UK companies and 16 non-UK companies, Harrow et al. (2006) found that the role of employees influences corporate donation and creates a climate of expectancy of companies' contribution, but there is no significant linkage between donation levels and corporate financial performance. However, based on a sample of 489 Fortune 500 companies, Crampton and Patten (2008) find that the extent of corporate contributions following 9/11 is positively and significantly associated with the companies' profitability, and the degree of connection to the catastrophic event led to higher levels of giving in comparison to the contributions of less-connected companies. So, the livelihood of donation and donation level are relevant to corporate finance performance including debt asset ratio, turnover, net profit, growth rate of real operation profit, net cash flows from operating activities, and increase in cash and cash equivalents. We thus assume that the companies with good financial performance have bigger motivation to take CSR initiative in a disaster, and the companies with good financial performance will donate more.

The extent of corporate contributions for state-owned companies following the Wenchuan earthquake is less than the private companies based on the data of Chinese companies' response to the disaster. State-owned companies have more responsibility to donate for disaster recovery. It's probably that state-owned companies have more restricted rules related to corporate donation than private-owned companies. Li and Zhang (2010); Li et al. (2013) explored the effect of corporate ownership on the relationship between firm performance and CSR disclosure. They indicated that the link between them is weaker among state-owned enterprises compared with non-state-owned ones. So, ownership has influences on corporate disaster donation.

Most present studies focus on the relationship between corporate characteristics and donation levels but lack the discussion of corporate leaders' influence on donation decision and donation level. Corporate donation behavior is relevant to corporate governance (Harrow et al. 2006; Zhang et al. 2009). Corporate governance is the set of processes, customs, policies, laws, and institutions affecting the way a company is directed, administered, or controlled. According to the upper echelons theory (Hambrick and Mason 1984), corporate governance is reflections of their top executives. The individualized corporate philanthropic behavior arises because of differences among chief executive officers in their experience, value, etc. Specially, recent researches have focused on the relationship between characteristics of CEO and corporate social responsibility activities (Barnett 2007; Waldman and Siegel 2008; Marquis and Lee 2013; Tian and Estrin 2008). So, from the perspective of upper echelons theory, corporate leaders play a key role in discretion over philanthropic activities. We further claim that characteristics of corporate leaders, such as age, education, and employment duration may have effects on philanthropic behavior.

In order to identify corporate donation intentions and explore how the donation firms respond to a disaster, we divide the corporate decision-making process into two stages: the decision to grant donation and how much to donate. The firms

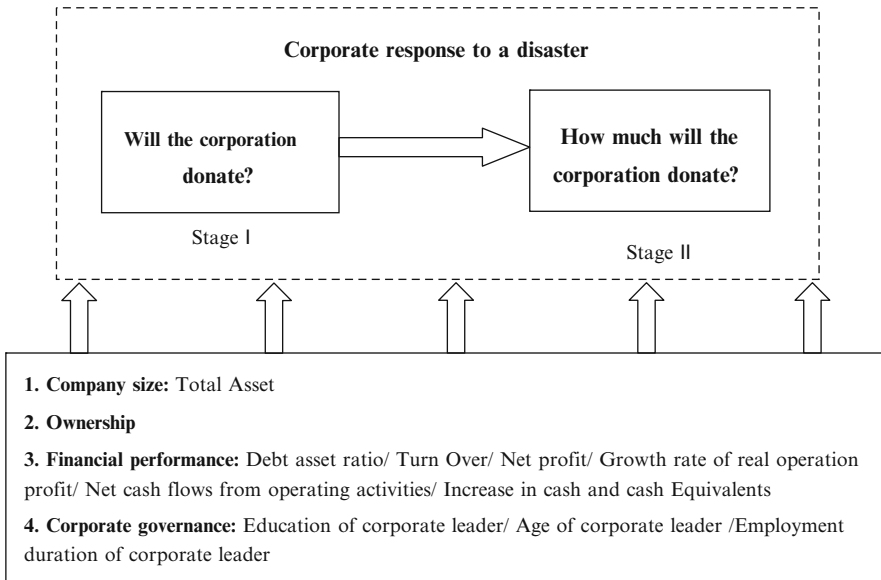


Fig. 8.1 A two-stage decision model of corporate donation

generally make decisions on how to donate based on the considerations of corporate financial performances and public's expectations for donation amount. As Fig. 8.1 shows, the determinants of corporate responses to disasters are concluded from five dimensions in terms of financial performance, corporate governance, and geography. In the following context, we propose the hypotheses of the two-stage model, and then examine and compare the influences of factors on the two-stage donation activities.

8.3 Why It Concerns Management?

Profit is company's primary focus. However, corporate eleemosynary behaviors, for example, donation to devastating disaster relief, may serve more than just an altruistic purpose. Companies are using their eleemosynary programs more as strategic tools to improve their social reputations which have further positive effects on corporate financial performance (Barney 1991; Dollinger et al. 1997; Deephouse 2000; Roberts and Dowling 2002; Saiia et al. 2003; Fernando 2007). It's generally accepted that firm financial performance and governance are related to corporate charity activities. So, corporate eleemosynary responses to a big disaster vary dramatically. It is essential for business managers to make clear of the process of decision behavior, the decision reason, and the forming mechanism of decision behavior. Moreover, a game relationship exists between companies and their competitors. For those corporations who consider philanthropic activities as marketing tools rather

than social responsibility, the proposed two-stage decision model of corporate donation can play a key role in firm decision-making practice.

Besides, there is a certain particularity about corporate donation activities in the Chinese market. A good fit between prior expectancy, knowledge, actions, and competencies of a company and a given social initiatives can reinforce the public perception and strengthen the company’s market position (Keller 1993; Drury et al. 2005). Companies in China thus have higher level of motivation to act high-fit initiatives as a reaction to a natural disaster.

8.4 Key Statistical Insights

Our purpose is to examine what determines the decisions to grant donation and the donation level in response to the 2008 Wenchuan earthquake. Not all data of all involved Chinese companies are available since most of the companies do not release their finance data to the public excluding the listed companies in China. So we base our sample on the listed companies in the Shanghai Stock Exchange (<http://www.sse.com.cn>) and Shenzhen Stock Exchange (<http://www.szse.cn>) of China. They are both the stock exchanges operating independently in China, funded by People’s Bank of China. Additionally, the management and trade system of the Shanghai Stock Exchange are almost identical with the Shenzhen Stock Exchange. The critical difference between them is that the Shanghai Stock Exchange focuses on medium- or large-scale enterprises, while the Shenzhen Stock Exchange puts emphasis on small- and medium-sized companies. There were 1604 listed companies in the two stock exchanges in 2008.

Before the exploration of determinants of the decision to grant donation and donation sizes, we want to identify and realize the preferred donation sizes using the analysis of sample frequency. As shown in Fig. 8.2, there are some preferred sizes

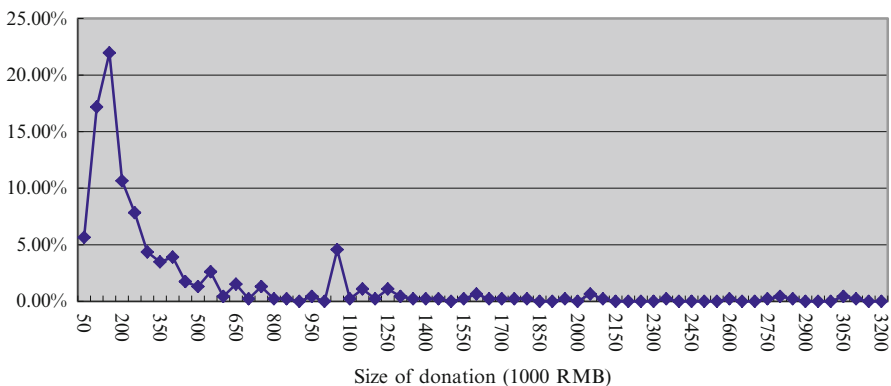


Fig. 8.2 The curve of samples frequency of corporate donation

of donation, namely, 1.5, 1, 2, 2.5, 0.5, and 10.5 million RMB, which mean that these listed companies selected the figure of donation. The profile of donation size shows there are two vertexes in the curve. One is 1.5 million RMB, and the other one is 10.5 million RMB. The percent of 1.5 million donations is 21.96 %, and the percent of 10.5 million is 4.57 %. For the middle and small listed companies, they preferred to donate around 1.5 million RMB, and for the large listed companies, they preferred around 10.5 million RMB. The abnormal distribution might be related to the type of donation, namely, conditional or not conditional upon corporate revenue. That is, actions undertaken as corporate social responsibility may be partly altruistic, and not all corporate donations to charitable causes are tied to revenue-producing transactions with the firm. In addition, the documented results also provide the empirical supporting for the emerging of strategic corporate eleemosynary behavior in China.

In this chapter, we construct a two-stage decision model of corporate donation to examine the determinants of corporate eleemosynary behaviors in terms of whether or not to donate and how much to donate, sampling on 908 listed companies who made donation. The binary logistic regression model and linear regression model are used.

The results of binary logistic regression analysis reveal that company size has negative effect on making decisions to donate for the disaster. Net profit has positive effect on the likelihood of corporate disaster donation. However, the firms with more stable net cash flows from operating activities would not donate, since the cash flow may be used to invest for future cash growth. In addition, state-owned companies, education, and employment duration of corporate leader are positively related to the decision-making of donation. If a corporate leader has been in a longer time at the position, he/she has the more influence on the corporate decision-making, which indicated that the changes of leadership may somewhat influence corporate eleemosynary giving for Chinese public listed companies with relatively large government stake and the associated, generally more concentrated, shareholding structure. The factors about leadership were always controlled in the model of estimating the firm's eleemosynary behaviors.

For the determinants of donation size, the estimate results show that total asset, debt asset ratio, ownership, and education of corporate leader are negatively linked to donation size. This research suggests that private-owned and smaller companies tend to donate and donate more. This may imply that these companies are driven to donate more in response to the disaster in order to meet the public's expectancy and improve their reputation.

8.5 Illustrative Examples, Cases, and Mapping

Apart from the research of corporate philanthropic behaviors, this chapter deeply explored whether and how corporate charity campaign affects the effects of CSR in emerging markets. The results indicated that charity activities are largely affected by donation size, donation time, and corporate reputation. Theoretically, our results

provide the incontrovertible evidence of motivation for firm “donation competition,” since larger donation size and earlier donation time can improve the effects of donation, which results in a static game between the donor and his/her competitors. The finding of this study may be interpreted as supporting cause-related marketing as a rational choice for most firms. Besides, the results can also be considered as the marketing strategy for the donors. Take the “Wanglaoji” brand, for example, 5 days after the Wenchuan earthquake in China, beyond all expectations, the corporate leadership decided to donate one hundred million RMB to the disaster area, which immediately attracted all the attentions from the public and media. The company’s sales therefore boomed. By now, the “Wanglaoji” brand has been the leader in the herbal tea beverage industry. Of course, the event was praised as the most classic network-marketing case.

8.6 Concluding Remarks

The determinants of corporate eleemosynary behaviors are examined based on a sample of 908 listed firms in China. The main limitation of this research is the reliability of the estimated results, which is not assessed by longitudinal studies. In fact, China is one of the countries most affected by earthquakes in the world. According to the figures from China’s National Bureau of Statistics, the earthquake caused direct economic loss of 96,850 billion RMB and 476,100 casualties in the past 13 years. There are many interesting cases that would be valuable to study. In future research, we will focus on verifying the two-stage decision model and explore the deeper motivation of corporate philanthropy by comparing two or more cases. For example, some firms donate during the Wenchuan earthquake, but the donor company does not exhibit eleemosynary behavior in the following disasters. Another interesting question is the timing of donation. It can be considered as a marketing strategy (Becker-Olsen et al. 2006). The question remains: which factors influence their consentaneous disaster responses? Moreover, there is a certain particularity about corporate donation behavior in the Chinese market. The results are not applicable to other countries.

The values of donations in cash or in kind from the nongovernmental actors to the people who suffered from disasters are immeasurable. Companies have their own advantages to provide assistance to the victims of disasters, which can significantly improve the effects of disaster relief. Because of the corporate primary purpose of pursuing profit, corporate eleemosynary behavior, such as donations to devastating disaster relief, may serve more than just an altruistic purpose.

The first contribution of this chapter is to help decision-makers to predict competitors’ decision-making on donation amount when responding to a disaster. The second is the formulation of a corporate donation decision problem incorporating some new factors, such as the level of education of corporate leader, age of corporate leader, and employment duration of corporate leader. These factors contribute to understanding the relationship between chief executive officer and business

decision-making. For the board members or senior executives, they should be aware of the influence of president transition on corporate eleemosynary activities, because such change may affect firm reputation and image.

Additionally, the result reveals that the preferred sizes of donation among all the donors make huge differences, which indicates that the decision of corporate disaster donation may be influenced by the pressure from other companies and the public. In the campaign of corporate disaster donation, companies need to choose the sizes of donation to compete with other companies and meet the public's expectancy other than provide the assistance based on their profitability (Oosterhof et al. 2008). Thus, for the enterprise decision-makers, the two levels of donation sizes allow them to select the proper donation amount consistent with the financial performance at the strategic level. Based on appraising the corporate financial capacity and the level of public's expectation, it will be tremendously helpful to implement the differentiation strategy for the donation competition. Meanwhile, with the increasing number of corporation eleemosynary activities, it is better for the Chinese government to construct the supervision mechanism to prevent against the donation fraud.

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Part IV

Technology

Chapter 9

Technology Management for New Product Development

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Abstract In this chapter, the authors explore the technology management capability (TMC) in new product development (NPD) of Chinese manufacturing firms from the perspective of knowledge. Firstly, insights from TMC and NPD literature are utilized, through which NPD and TMC are connected by knowledge. The effects of TMC and its elements in different NPD stages are then theoretically analyzed by taking knowledge issues as a bridge. Secondly, data of TMC and NPD are collected from Chinese manufacturing firms and analyzed by regression technique to verify the theoretical findings. Thirdly, a typical Chinese manufacturing firm is selected for further verifying the findings and illustrating their application. The results show that TMC has a significantly positive relationship with NPD performance: searching capability and selecting capability exert greater impacts on NPD performance in the idea development stage; implementation capability and learning capability exert greater impacts in technical implementation stage; and searching capability and learning capability exert greater impacts in commercialization stage. These findings not only benefit managers in China and the West by deepening their understanding of the mechanism of TMC affecting NPD, but also provide managers with a practical and effective tool of analyzing problems in NPD—NPD problem analysis sheet.

Keywords Chinese manufacturing • Technology management • New product development • Knowledge

9.1 Introduction

China's manufacturing industry is undergoing radical transformations due to the mega-competition taking place on a global scale, and there is a strong need for new product development (NPD) as it leads to market differentiation and serves as a major opportunity for manufacturing firms in competitive markets. But the majority of Chinese manufacturing firms remain relatively weak in NPD (Guan et al. 2006).

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The ratio of new product sales revenue to revenue from the principal business of China's manufacturing industry is at the low level (13.5 % in 2011) and hasn't increased since 2006 (13.2 %). It even decreased to 12.1 % in 2009. It is argued that 47 % of the challenges faced by Chinese manufacturers relate to internal management. In the era of knowledge-based economy, neither technology application nor process type seems to be critical for NPD performance, and knowledge and managerial issues are more significant players in the NPD performance of Chinese manufacturers (Zhu et al. 2012). However, many Chinese manufacturers spend a great portion of the innovation cost in acquiring technological equipments, but largely overlooked improving their technology management skills (Wu et al. 2012). It is argued that China's manufacturing industry cannot rely on traditional production factors (such as low-cost labor) for its competitive advantage, but instead must focus on management issues, especially technology management (TM) (Li 2013).

Emerging technologies, such as nanotechnology, biotechnology, and information and communications technology, provide significant opportunities for enabling innovation, profit, and growth, but also present a potential threat to firms' existing activities. TM seeks to inform decision making by identifying, understanding, informing, and exploiting the critical technologies needed to provide the capability demanded. It also involves developing an awareness of the technologies which are available or may be available in the future (Teece et al. 1997). Thus, effective management of technology seems significant, especially as the complexity, cost, and rate of technological innovation increase, at a time of increasing organizational and industrial change on a global scale. The rapid emergence of powerful and innovative technologies further strengthens the critical role of TM in virtually all organizations (Oerlemans et al. 2013). Especially for manufacturing firms, TM not only encompasses the management of research, product and process development, and manufacturing engineering, but also implies developing an understanding as to how all of the technologies of a business can be integrated, directed toward some specific objectives, and optimized with all the other business resources. TM is achieving more and more importance in manufacturing firms, and industrial and academic interest in TM is growing.

Despite the importance of TM, few studies have focused on the effects of technology management capability (TMC) on NPD. This leaves the question unsolved: How does TMC affect NPD performance in Chinese manufacturing firms?

To answer this question and to add our knowledge of NPD in China's manufacturing industry, this chapter has the following objects:

- Introduces TMC as a new affecting factor of NPD performance
- Explains the theoretical framework underlying the relationship between TMC and NPD from the knowledge-based perspective
- Reveals the effects of TMC on the NPD performance in different stages
- Illustrates how our findings can be applied in practice with a case example
- Concludes by emphasizing the theoretical and practical significance of our findings

9.2 Diversity of Perspectives

This paper illustrates a multi-perspective approach in research for the TM in China. The multi-perspective approach can be viewed as a multimethodology, which employs more than one method or methodology and provides examples (Mingers and Brocklesby 1997). Our basic logic for this research is using Soft Systems Methodology to identify and gain agreement on desirable changes and then combining this with a “hard method” such as statistical analysis to help implement them. The reasons we adopt the multi-perspective approach are that real-world problem situations are multidimensional and that there will be physical or material aspects, social and political aspects, as well as personal ones (Nunnally 1978); and managing technology in NPD is not usually a discrete event but proceeds through a number of phases that pose different tasks and problems for technology managers. Besides, combining different methods can provide triangulation on situations generating new insights and providing possibilities for validating results.

For the purposes of this paper, first, insights from TM and NPD literature are utilized, through which NPD and TM are connected by knowledge. The relationship between NPD and TM are then theoretically analyzed. Second, statistical analysis is employed. Data are collected from Chinese manufacturing firms and analyzed by regression technique to verify the theoretical findings. Third, a case study is conducted. A typical Chinese manufacturing firm is selected for further verifying the findings and illustrating their application. In conclusion, we try to use several whole methodologies to address different parts of problem situations where the most ambitious approach is to link together different parts from several methodologies, creating a design specific to the particular situation. We believe our study can be consolidated by using perspectives from theories, data, and case.

9.3 Conceptual Overview and Theoretical Framework

9.3.1 *Conceptual Overview*

TMC is defined as a firm’s dynamic capability of planning, developing, exploiting, and implementing technological capabilities to improve the firm’s competitiveness (Cetindamar et al. 2009). The concept of TMC is based on the five-process technology management framework, including (1) identification of technologies that are not currently part of the firm’s technology base, but may be important in the future; (2) selection of those technologies that the firm needs for its future products and technologies; (3) acquisition of the technologies that have been selected; (4) exploitation of the technologies that have been acquired; and (5) protection of the technological assets of the firm. The five-process framework is widely accepted. Based on this model, learning is emphasized since it forms a critical part of technological competency which involves reflections on technology projects and processes carried out within or outside the firm. Thus, TM is not a mechanical methodology but a process to aid learning experiences that are flexible and can be adapted to the specific circumstance as well as each process

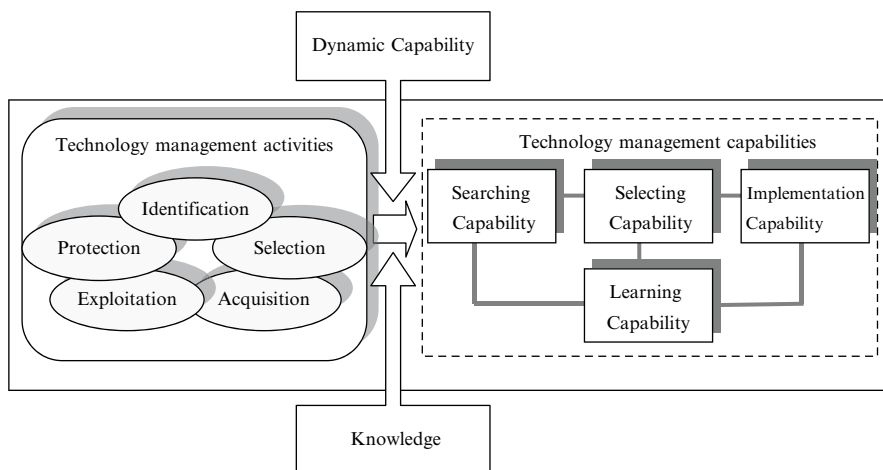


Fig. 9.1 From TM activities to TMC

benefiting from the feedback and learning that is achieved. As a collection of routines/activities to execute and coordinate the variety of tasks required to manage technology, TM can be understood from the perspective of dynamic capability to form the concept of TMC, which is, however, more general (see Fig. 9.1).

TM processes fall into three activities: (1) producing scientific and technological knowledge; (2) transforming knowledge into working artifacts, reflecting that technological or scientific possibility does not necessarily imply practical feasibility; and (3) matching artifacts with user requirements, whether internal or external, and organizational support routines (Scott 2000). Accordingly, TMC is viewed as the capability to make effective use of technical knowledge and skills, not only in an effort to improve and develop products and processes but also to improve existing technology and to generate new knowledge and skills in response to the competitive business environment (Bowonder and Miyake 2000; Kerr et al. 2013). TMC involves searching knowledge inside and outside the firm, selecting valuable knowledge to make strategic plans, and implementing these plans, with all of these activities being connected by knowledge learning (Cotec 1998; Levin and Barnard 2008; Cetindamar et al. 2010). There are four elements composing TMC (see Table 9.1).

9.3.2 Theoretical Framework

NPD process is a formal blueprint, roadmap, template, or thought process for driving a new product project from the idea stage through to market launch. New product success is particularly influenced by certain key stages in the new product process. Three key stages are identified in NPD in China's manufacturing firms: idea development stage, technical implementation stage, and commercialization stage (Ernst et al. 2010).

Table 9.1 Elements composing TMC

TMC elements	Definition	Key activities
Searching capability (SHC)	The firm searches or scans its internal and external environments to gather and process signals about strength, weakness, opportunity, and threat	R&D environmental monitoring, business unit environmental monitoring, corporate environmental monitoring, and technological capability monitoring
Selecting capability (STC)	Selecting capability deals with issues that the firm will commit resources to doing, especially the activities related to strategic management of technology portfolios highlighting the importance of understanding the specificities of technologies and its impact across the firm’s functions	R&D portfolio evaluation, postproject audit, technology roadmapping, product portfolio evaluation, feasibility study, and technology need assessment
Implementation capability (IC)	Implementation involves resourcing and executing the decisions made in the selecting process	Intellectual property management, project execution, technology transfer, technology adaptation, postproject support, performance management, technology alliance management, and personnel management
Learning capability (LC)	Learning means to reflect on the previous elements and review the experience of success and failure, to learn how to manage the process better and capture relevant knowledge from the experience	Structured and challenging reflection on the process, conceptualizing, experimentation, and honest capture of experience

The idea development stage typically involves the generation and assessment of new product ideas and further refinement of the most promising ideas into new product concepts before they enter the development stage. The collection of customer knowledge is critical in this stage due to the high level of uncertainty regarding customer requirements. The technical implementation stage is primarily concerned with the development of the actual product, and this is mainly a task for R&D. Right from the idea development stage to the implementation stage, the creation of new knowledge can be viewed as the central theme of the NPD process. In addition, the specific knowledge acquired about customers from sales and further knowledge from marketing are also significant. The commercialization stage typically involves activities such as market launch, product training, after-sales support, and monitoring of competitors’ reactions. This stage involves a process of aligning the features of the product knowledge with customer requirements. Thus, to enable the invention of new products, the NPD process requires creation and utilization of knowledge. New knowledge enables both learning and creativity leading to reproduction of the existing knowledge base.

New product performance is closely linked to the three stages undertaken in the NPD process, and the success of NPD depends on how well the tasks of different

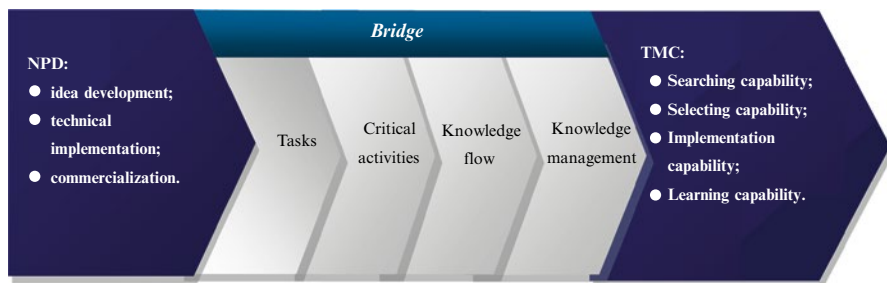


Fig. 9.2 From NPD to TMC: from the perspective of knowledge

stages are carried out and how well the critical activities in the tasks are executed. It is argued that the NPD team has embedded knowledge and the new product is embodied knowledge. Therefore, the task of NPD, which is the result of both internal knowledge development and the acquisition and application of external knowledge, is regarded as managing the transition from embedded knowledge to embodied knowledge (Knudsen 2007). From this perspective, knowledge flow is an important process in NPD. For China's manufacturing firms whose economic success derives from advantage achieved through NPD, the ability to manage and control knowledge flow has always been significant for the execution of the tasks and critical activities.

Technology is a kind of knowledge that encompasses tools and practices deliberately employed as natural means for attaining clearly identifiable ends (Small and Wainwright 2014). Thus, knowledge management activities can be reflected in TM and further determine the effects of TMC in different NPD stages. Thus, we use knowledge as a bridge linking NPD and TMC. Figure 9.2 shows the logic we applied in analyzing the effects of TMC on NPD.

9.4 Key Insights

9.4.1 *Tasks and Critical Activities in NPD*

In line with the Stage-Gate system theory, the NPD process in China's manufacturing firms begins with idea development. Ideas for a new product may be spotted in the marketplace: a competitor's product, recognition of unsatisfied customer needs, or direct requests from customers. An idea results when technological possibilities are matched with an expected market demand. Then significant resources are spent to gather information regarding the feasibility and attractiveness of the product, and the technical implementation stage begins in earnest (Kim and David 2002). Here, technological resources—R&D and engineering and industrial design—are mostly involved. A prototype or product sample is the usual outcome of this stage. Product prototypes are tested within the firm to determine that no technical flaws exist. The

Table 9.2 Tasks and critical activities in different stages of NPD

Stages	Tasks	Critical activities
Idea development	Identify customer needs	Develop new product strategy; market/technical/financial analysis
	Acquire practical new ideas	Idea generation/screening Concept development and testing
Technical implementation	Design and manufacture new products with high speed, low cost, and high quality	New program initiation
		Engineering operation planning
		Resource plan publication
		Prototype/sample product development In-house product testing
Commercialization	Get higher profit rate for new product compared with competitors	Customer tests of product
		Trial sell
		Trial production
		Market launch
		Customer feedback

in-house tests from the previous stage provide the inputs to finalize the product design, while the development of a marketing plan has been proceeding since the concept stage. A trial or pilot production run tests the production method that will eventually be used for full-scale production. Modifications to the final production facilities or methods are often required in order to alleviate problems uncovered in the pilot production (Song et al. 1998). If the tests have been well carried out, product prototypes go into the commercialization stage, which involves startup of full or commercial production and the implementation of the marketing plan in the full market area. Postlaunch evaluation or control points at predesignated times after launch provide benchmarks to gauge whether the product is “on target,” and the most important benchmark is customer feedback (Sherman et al. 2005). Table 9.2 summarizes the tasks and critical activities in different stages of NPD.

9.4.2 Knowledge Flow and Knowledge Management in NPD

The essence of NPD is the creation of new knowledge and using it to solve problems and create products that have value in the marketplace (Pitt and MacVaugh 2008). Thus, the execution of the tasks and activities in different stages is accompanied with exchanging and combining existing information, knowledge, and ideas. In the idea development stage, the NPD team gets product ideas and previous experience from the firm’s knowledge base to generate new product concepts. During this process, customers, especially leader users, suppliers, competitors, R&D institutions, universities, and the firm’s management department play important roles as providers of knowledge of needs, technology, management, etc. In the technical implementation stage, the prototype product knowledge is created and is transferred to manufacturing departments and customers for testing and improving (Díaz-Díaz

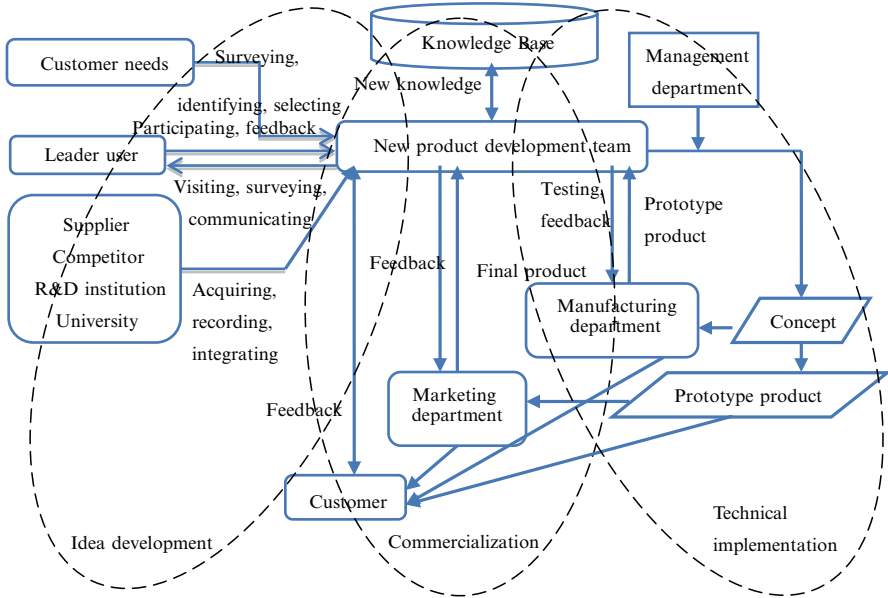


Fig. 9.3 Knowledge flow in NPD

et al. 2008). In the commercialization stage, the product knowledge is integrated with knowledge from marketing departments and customers and eventually transformed to customers. The knowledge flow in NPD process is illustrated in Fig. 9.3.

To ensure the knowledge flows smoothly across different departments, NPD team members, and customers, knowledge management activities are required in different NPD stages (Tsai 2001). External knowledge internalization, tacit knowledge exploitation, knowledge creation, and knowledge innovation play more important roles in developing product ideas. Key knowledge management activities in the technical implementation stage include knowledge sharing between the R&D department and the manufacturing department, knowledge exchange in NPD team members, and knowledge acquirement from experts. Knowledge exchange in manufacturing and marketing departments, knowledge transformation to customers, knowledge renewal, and knowledge storing are called for by successful product commercialization.

9.4.3 From Knowledge Management to Technology Management in NPD

The TM activities reflecting the key knowledge management activities in the idea development stage include searching product and technology knowledge, analyzing technological capability, planning the progression of technology to be developed by

R&D, and determining the role of various technologies. In order to understand the knowledge of customer needs and get practical new ideas and knowledge, the firm must scout technology/marketing/resource information and past experience from knowledge base. Searching results in acquisition of an abundance of complex information, so knowing how to interpret signals and make selections that are most likely to impact competitiveness is also important (Todorova and Durisin 2000). Therefore, in the idea development stage, searching capability and selecting capability exert greater impacts on NPD performance.

The main TM tasks in technical implementation stage focus on the explication of tacit knowledge. The firm must plan how to develop products by capturing experience and lessons and external knowledge, design the product development handbook and product process framework, and provide assessment reports to the firm’s decision makers. Then the firm should implement NPD strategy and get all sorts of resources to ensure the quality of products and reduce risks in NPD. It is implied that in the technical implementation stage, implementation capability and learning capability exert greater impacts on NPD performance.

In order to transform the product knowledge to customers, two points must be highlighted: good products and right customers. A good product relies on the interactions among R&D, manufacturing, and marketing. Customers are identified through searching market information and investigating the market. The interaction between customers and the product leads to new product knowledge. The firm must learn the new knowledge for improving the product and capture and codify the knowledge learned into its knowledge base for generating other new ideas. Thus, searching capability and learning capability exert greater impacts on NPD performance in commercialization stage.

Figure 9.4 summarizes the effects of TMC on NPD.

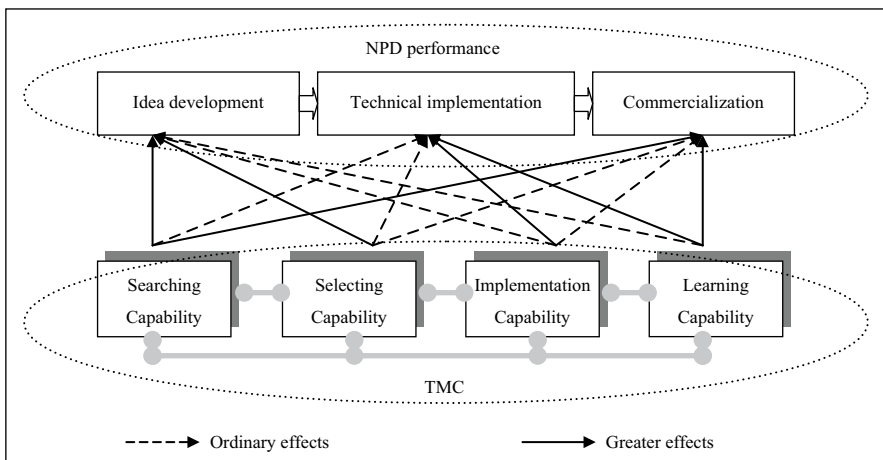


Fig. 9.4 Effects of TMC on NPD

9.4.4 *Statistical Findings*

To test the effects of TMC on NPD, we analyze data collected by questionnaire survey. The extant literature was reviewed to identify items to measure the constructs of TMC and NPD performance of different stages. The survey instrument was written in Chinese. We sent the questionnaire to 153 Chinese manufacturing firms in Beijing, Heilongjiang province, Liaoning province, Jilin province, Shanxi province, Shaanxi province, Gansu province, Jiangxi province, Jiangsu province, Hunan province, and Sichuan province. The industries represented in the sample include automobile manufacturing industry, biopharmaceutical industry, telecommunication manufacturing industry, machine tools manufacturing industry, aerospace industry, and railway transportation equipment manufacturing industry.

We use multiple-item measures to measure the corresponding construct. All of those measures are scored on five-point Likert scales. Some measurement items were derived and adapted from validated scales, while some items were developed specifically to reflect the real situation in China's manufacturers. Four items are used to measure the idea development performance, including my firm knows the customer needs, my firm generates more new product concepts than our competitors, and my firm screens new product concepts more effectively than our competitors. Four items are for the technical implementation performance, including my firm designs new products faster than our competitors, the quality of new products of my firm is high, the success rate of new product development is higher than our competitors, and the cost of new products of my firm is lower than our competitors. The commercialization performance is also measured by four items including my firm launches new products faster than our competitors, the profit rate for new products of my firm is higher than our competitors, the market share of new products of my firm is higher than our competitors, and customers are satisfied with new products of my firm. The measure of TMC consisted of measures of its four elements. By reorganizing the routines of technology management frameworks of Wu et al. (2012), we developed six items to assess searching capability, four items to assess selecting capability, and five items to assess implementation capability. We used four items describing learning in TM from Cotec (1998) to assess learning capability.

Senior managers in firms direct technology management and NPD and thus have a more comprehensive understanding of TMC and NPD in the firm; thus, we asked senior managers to complete the questionnaire. Completed questionnaires were returned in sealed envelopes or as e-mail file attachments. To avoid information bias and increase the valid survey response rate, we collected only one questionnaire from each of the 153 firms. This sample was sufficient to allow statistical analysis at the firm level.

All coefficient alphas for independent variables are above 0.70, which indicates acceptable reliability using Nunnally's benchmarks. In total, the high reliability coefficients indicate significant convergent validity. With the questionnaire being

based on existing literature, we asked a panel of experts to review the indicators and the scope of the content of the questionnaire. The experts verified that the indicators and the contents of the questionnaire accurately represent the measurement objective, thus establishing that the questionnaire has a good content validity. In addition, a confirmatory factor analysis for the dependent variables indicated a good measurement model fit, and all items have significant loadings on their construct, thus demonstrating convergent validity.

We use partial least squares (PLS) method to construct equations to estimate the effects of TMC on NPD performance in different NPD stages. The equations can be expressed as follows:

$$NPDP_i = C + \alpha SHC + \beta STC + \gamma IC + \delta LC + \varepsilon \quad i = 1, 2, 3$$

where $NPDP_i$ represents NPD performance of the i stage ($i=1$ represents the idea development stage; $i=2$ represents the technical implementation stage; $i=3$ represents the commercialization stage) and α , β , and γ are the coefficients. The results of regression models are shown in Table 9.3.

The results show that TMC exerts positive effects on NPD performance significantly ($p < 0.01$), since the four elements of TMC all have significant impacts on NPD performance in different stages. This implies that TMC is an important affecting factor of NPD.

The results also show that the effects of selecting capability (0.697, $p < 0.01$) and searching capability (0.506 $p < 0.01$) on NPD performance in idea development stage are greater than learning capability (0.320, $p < 0.01$) and implementing capability (0.237, $p < 0.01$); in technical implementation stage, the effects of learning capability (0.671, $p < 0.01$) and implementation capability (0.502, $p < 0.05$) are greater than searching capability (0.362, $p < 0.1$) and selecting capability (0.288, $p < 0.1$); in commercialization stage, learning capability (0.712, $p < 0.01$) and searching capability (0.566, $p < 0.01$) exert greater impacts on NPD performance than implementing capability (0.432, $p < 0.05$) and selecting capability (0.372, $p < 0.1$). The results support our theoretical findings.

Table 9.3 The regression analysis results

Stages	Idea development	Technical implementation	Commercialization
Searching capability	0.506***	0.362*	0.566***
Selecting capability	0.697***	0.288*	0.372*
Implementing capability	0.237***	0.502**	0.432**
Learning capability	0.320***	0.671***	0.712***
R square	0.891	0.803	0.765
F	57.141	46.265	50.815
Adjusted R square	0.875	0.779	0.706

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

9.5 Implications for Managers

Due to the importance of technology in manufacturing firms, managers must deal with NPD issues from the perspective of technology management. Our findings prove that TMC exerts significantly positive effects on NPD performance. TMC thus should be regarded by managers in Chinese manufacturing firm as a key capability like technological capability and be one of the managers' most concerns about NPD. On the other hand, with the increasing share of China in the global economy, a focus on the NPD of China cannot only enhance their understanding of the NPD of Chinese firms, but also can help firms worldwide learn how to exploit the world's largest untapped market and highest growth potential. It has become clear that businesses wanting to succeed globally will need to win in China first. Thus, our findings are also of interest to decision makers in the West because it is positive in helping them to better manage their NPD process in the Chinese context.

To be specific, our findings contribute to managers' understanding of the mechanism by which TMC affects NPD performance in Chinese manufacturing firms. Our findings empirically reveal the roles of TMC in different NPD stages, which have seldom been addressed before. Specifically, our results verify within the Chinese manufacturing context that selecting capability and searching capability exert greater impacts on NPD performance in idea development stage, implementing capability and learning capability exert greater impacts on NPD performance in technical implementation stage, and learning capability and searching capability exert greater impacts on NPD performance in commercialization stage. The findings thus provide a microfoundation for investigating the transformation from TMC to NPD performance, shedding light on ways to identify and develop competitive advantages for China's manufacturing industry (other than low-cost labor) that can help sustain economic growth in the current era.

At the same time, our findings expand managers' understanding of the relationship between TMC and NPD by implying the length of time when a TMC element dominates. The theoretical and empirical findings illustrate that searching capability and learning capability exert more important influences in two NPD stages, separately, while selecting capability and implementing capability exert more important influences only in one stage, separately. Thus, our findings enrich managers' knowledge of NPD by proposing that different TMC elements should be emphasized in the promotion of NPD performance.

Our findings also contribute to expanding managers' knowledge by demonstrating the knowledge flow and knowledge management activities in NPD stages in the context of manufacturing firms in an emerging economy like China. Prior knowledge management practices in China's manufacturing firms are focused mainly on the effects of knowledge issues on NPD as a whole, with NPD stages rarely being considered. Our study theoretically reveals the knowledge flows in different NPD stages and the emphases of knowledge management in different NPD stages. These results illuminate a new perspective for NPD management.

Besides adding managers' knowledge of technology management, knowledge management, and NPD, our findings can be applied directly to guide the development of TMC in NPD. Our findings highlight the importance of TMC and imply that firms should thus promote NPD performance by strengthening TMC. According to our results, to promote idea development performance, selecting capability and searching capability should be strengthened; to promote technical implementation performance, implementing capability and learning capability should be strengthened; and to promote commercialization performance, learning capability and searching capability should be strengthened.

More importantly, our findings provide a practical and targeted method for Chinese manufacturing firms to solve the problem on how to promote their unsatisfying NPD performance from the technology management perspective. Firms can easily find out the reasons of the problems of their NPD projects according to our findings and then take measures. We'd like to illustrate this by an example in the next section.

9.6 An Illustrative Example

We use the DE company as an example to illustrate how our findings can be applied to analyze NPD problems. DE is a typical equipment manufacturing firm in China, specialized in R&D of cutting-edge technology of engine products. DE was founded in the 1940s. In the past 60 years, over 20,000 sets of engine and transmission system have been accumulatively developed, produced, and repaired since DE's foundation, making a significant contribution to the national economic development in China. DE created eight "firsts in new China" products: the first piston seven engine, the first piston eight engine, the first turboshaft engine, the first turboprop engine, the first railway reduction jack, the first WJ5AI engine, the first DA462 minicar engine, and the first gas turbine mobile power station. DE has learned, accumulated, innovated, improved continuously, and cultivated a one-talent team full of youthful spirit and abundant in innovation, and its development and test on small-size engine rank at national leading level. DE owns a state-level technical center and establishes a post-doctor R&D workstation and medium and senior engineers' training base. DE has become the development and production base for engine and transmission system in China and is one of the backbone enterprises.

For promoting DE's NPD performance, we firstly identify its problems in NPD process and then explore the reasons by applying our results.

Face-to-face interviews were conducted with the senior managers and NPD managers of DE for the problems in NPD process. Seven main problems are identified according to the interviews.

Then we make a problem-analyzing sheet by integrating NPD stages, problems, and TMC (Table 9.4).

Table 9.4 NPD problem analysis sheet

NPD stage	Problems	Searching capability	Selecting capability	Implementation capability	Learning capability
Idea development	New product ideas were almost entirely reliant on responding to competitors' innovations or acting on a customer's suggestion	√	√		
	<i>DE lacks the internal idea generation</i>				
	While there are legitimate sources of new product ideas, it's difficult to provide the consistent flow of knowledge which are necessary for remaining competitiveness				
	The board of directors have weaknesses in evaluating new ideas				
Technical implementation					
Commercialization	Little thought was given to issues such as the size, structure, and behavior of the target market or the need for a marketing budget and distribution strategy	√			√
	The management team did not proceed systematically through the final activities of the NPD process: business analysis, market testing, and commercialization				
	The NPD team consisted entirely of engineers who were primarily concerned with the engine design, development, and manufacture				

The problems identified are then put into the sheet. It was revealed that DE is good at technical development for new products, but has weaknesses in idea generation and commercialization.

According to our findings, TMC elements affecting NPD in the idea development stage are searching capability and selecting capability, and TMC elements affecting NPD in the commercialization stage are searching capability and learning capability. Thus, we infer that from the perspective of technology management, the reasons of DE's problems in NPD are that its searching capability, selecting capability, and learning capability are weak with searching capability as the weakest since it is concerned with all the seven problems.

To confirm this judgment, we made a questionnaire survey of DE's TMC. The results show that the score of DE's searching capability is 2.35, which is low compared with the average score (4.30) of our sample firms' searching capability. Its scores of selecting capability (3.66) and learning capability (3.59) are also lower than the average scores of 4.25 and 4.10, respectively. However, DE's implementation capability is strong, whose score (4.34) is even higher than the average (4.20). This is consistent with the judgment we have put forward. Thus, according to our analysis, DE should promote its searching capability, selecting capability, and learning capability with more attention on searching capability. Measures that should be considered include constantly scanning the external environment, including technologies, competitors, suppliers, customers, regulators, etc.; making a detailed analysis of its technological capability; investigating the market and technical feasibility of an idea; choosing a creative process to develop new product/process; planning the progression of technology to be developed by R capturing and codifying the lessons learned into frameworks and eventually procedures to build on lessons learned; and making the structured and challenging reflection on NPD process.

9.7 Concluding Remarks

In recent years, TMC in the manufacturing industry has attracted much attention from scholars, firms, and governments in practical applications and academic discussion. However, there has been little focus on how TMC affects NPD in Chinese manufacturing firms, and we therefore conducted this study to fill this research gap. We analyzed the influence of TMC on NPD performance by analyzing the knowledge flow and knowledge management in different NPD stages. Using data collected via a survey questionnaire from Chinese manufacturing firms, we empirically established that TMC has a significantly positive relationship with NPD performance. More importantly, we revealed that searching capability and selecting capability exert greater impacts on NPD performance in the idea development stage, implementation capability and learning capability exert greater impacts in technical implementation stage, and searching capability and learning capability exert greater impacts in commercialization stage. These findings not only benefit managers in China and the West by deepening their understanding of the mechanism of TMC

affecting NPD, but also provide managers with a practical and effective tool of analyzing problems in NPD—NPD problem analysis sheet. These show the value of this study.

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Chapter 10

Entrepreneurial Innovation and Performance in Forestry

Yongji Xue and Xinyu Liu

Abstract Farmers have been fully motivated and their attitude and recognition to entrepreneurship have been strengthened with the reform of collective forest right in the forest zone in China in recent years. It has important significance to encourage farmers to take part in entrepreneurial activities in the forest zone in China, and it requires farmers, related companies, and government work together to improve the performance of entrepreneurship. This chapter tests the relationships of innovation consciousness, proactiveness, risk taking, and performance of farmers with an investigation data and then builds cooperation mechanism of forest farmers and companies. The empirical results show that consciousness and proactiveness have positive influence to the performance of farmers, and risk taking has no influence to the performance of farmers. And then, this chapter builds a contingent mechanism between firms and farmers consisting of two mechanisms: control right mechanism and overlook mechanism. The control right mechanism refers to whether a party has the right to make decision and the overlook mechanism refers to effectively reducing the organizer's private profit. Based on the empirical results, with circumstances of China and the cooperation mechanism which this chapter built, this chapter analyzes the entrepreneurial activities of farmers and the link of the cooperation with companies and gives some suggestions on improving the performance of farmers and the efficiency of the cooperation of farmers and companies. At the same time, this chapter analyzes the function of government and gives suggestion that farmers should choose entrepreneurial projects which the government supports because the government provides interest-free loans, technology service, etc. to these projects usually.

Keywords Farmer • Innovation and entrepreneurship • Contingent mechanism • Cooperation mechanism • Function of government

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10.1 Introduction

Entrepreneurship is the process of carrying out new combination or the creation of new organizations. Meanwhile, research in the field of entrepreneurship has mainly assumed that entrepreneurial initiatives were the results of an individual's actions (Beaydoin et al. 2011). The objective of this chapter is to develop an understanding of how entrepreneurial orientation influences the operating performance of farmers in the forest zone in China and the cooperation of farmers and company.

The reform of collective forest right is carried out in all around China in these years. Right reforms provide the basic and opportunity of entrepreneurship, but the background of entrepreneurship is innovation consciousness (Krueger 2007; Thompson 2009). Still, innovation consciousness isn't able to improve the operating performance of farmers directly, because innovation consciousness needs to change into practice through entrepreneurship and then influence the operating performance. The second objective is to explore the relationship between entrepreneurial orientation and the operating performance of farmers in the forest zone in China. Therefore, this chapter divides entrepreneurial orientation into three dimensions, namely, innovation consciousness, proactiveness, and risk-taking propensity, to tell farmers the relationship of them with operating performance of farmers in the forest zone.

Nowadays, the proactiveness of farmers in the forest zone has been fully motivated and their attitude and recognition to entrepreneurship have been strengthened with the reform of collective forest right being deepened. Farmers in the forest zone have various ways to expand current scale of production or to carry out new production activities, like depending on family structure or building up new organizations, investing amount of capital, or relying on forest resource. Meanwhile, because of the small and highly scattered scale of operation, farmers in the forest zone are facing a big challenge. It dramatically influences the proactiveness of farmers. Under this circumstance, the business mode of combining firms and farmers has been regarded as an effective method to deal with the difficulty that farmers in forest zones face in starting up business.

10.2 A Conceptual Overview

To explore the relationship between innovation, entrepreneurship, and the operating performance, the factors of entrepreneurial orientation are chosen. Based on the above cognition, a framework of the relationship is formed. Entrepreneurial orientation is divided into three dimensions, namely, innovation consciousness, proactiveness, and risk-taking propensity (Micheels and Gow 2008). This chapter investigates the effects of innovation consciousness, proactiveness, and risk-taking propensity on operating performance.

Meanwhile, to analyze the cooperation between firms and farmers, this chapter puts forward a framework. This framework analyzes the sustainability of the cooperation between firms and farmers and its related governance mechanism. Under

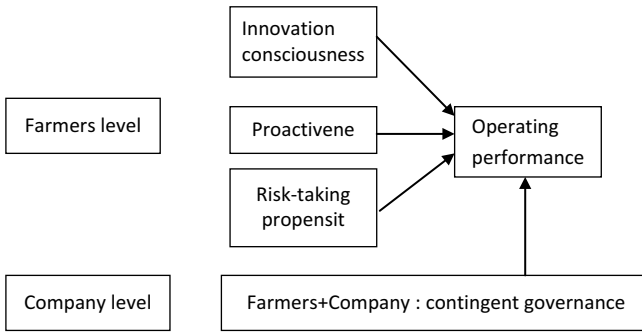


Fig. 10.1 Research framework

this framework, firms and farmers cooperate in different forms, such as being a shareholder, procuring orders, and so on. It creates a win-win situation in this way: firms promote farmers’ entrepreneurial performance, while farmers make full use of the forest resources in an effective way for the firms. Figure 10.1 presents the research framework.

This research contributes to the farmers in the following way: firstly, prior research on innovation and entrepreneurship of agriculture and forestry rarely discusses it on the level of farmers. We fill this gap by investigating the relationship between innovation consciousness, proactiveness, risk-taking propensity, and operating performance. Secondly, the empirical studies of innovation and entrepreneurship of farmers are still scarce, limiting understanding of the field. We have made a little attempt to develop a systematic framework to test the comprehensive model.

10.3 Why It Concerns Management

Farmers in forest and agriculture know the importance of innovation and entrepreneurship. However, to improve their performance, how to do in innovation and entrepreneurship is of more importance. This paper tells the farmers the relations of innovation, entrepreneurship, and performance and tells farmers how to improve their performance throughout innovation and entrepreneurship.

10.4 Key Statistical Insights

10.4.1 Methods

To measure innovation consciousness, entrepreneurial orientation, and operating performance, a questionnaire was designed. The questionnaire was pretested in Fujian province of China in 2011, and the total number of pretest was 100. The

Table 10.1 The index of the structural model

			Est.	S.E.	C.R.	<i>P</i>
Operating performance	←	Innovation consciousness	.383	.142	2.696	.007
Operating performance	←	Proactiveness	.524	.088	5.936	.000
Operating performance	←	Risk taking	.012	.062	.194	.846

questionnaire was modified based on the pretest, and only minimal changes were made. The formal investigation was made in Fujian, Zhejiang, and Jiangxi provinces, which are provinces with abundant forest resource. The questionnaire was sent to 1,000 farmers with statistical sampling principles by face-to-face investigation. The response rate was 55 %, with 238 valid responses collected.

The objective of this research is to analyze the impact of entrepreneurial orientation on performance of farmers in forestry. Multiple regression equation is used to measure the relations.

10.4.2 Results

After testing the validity and reliability, this study tests the fitness of the structural model, and the results are shown in Table 10.1. According to the results, innovation consciousness has positive impact on performance directly ($\gamma_{13}=0.383$, $p=0.007$). Proactiveness has positive impact on performance ($\gamma_{23}=0.383$, $p=0.000$). However, risk taking has no positive impact on operating performance ($p=0.846>0.1$).

10.5 Cooperation Mechanism

This chapter analyzes the cooperation mechanism between firms and farmers based on the example of farmers being a shareholder in a firm. One of the major reasons why contingent governance mechanism can be favorable in theoretical and practical field is that the characteristics of contingent governance are suitable for the organization of entrepreneurial activities. In order to analyze the contingent governance mechanism between firms and farmers further, this chapter proposes hypotheses as follows:

Hypothesis one: Provided that a capable farmer cooperates with a professional firm due to the needs of market channel or the limitation of resource, their operation process can be seen as P1. Suppose that the organizers make operational decisions in this process, while other farmers, which are called participating farmers, as a whole part, have the right to do the democratic decision-making and have the right to replace managers or to clear the organizations. The process can be shown in Fig. 10.2.

Hypothesis two: When cooperation relationship is built up, participating farmers will make their decision according to the condition of the first phase of project. If the condition appears to be unfavorable, the participating farmers can quit in the

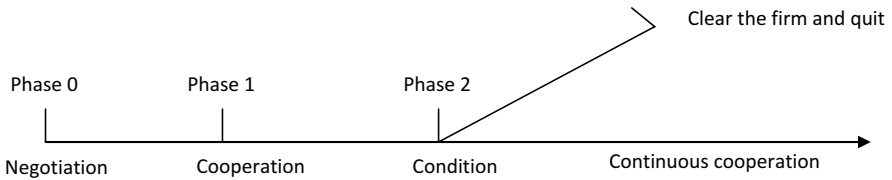


Fig. 10.2 Operational process between firms and farmers

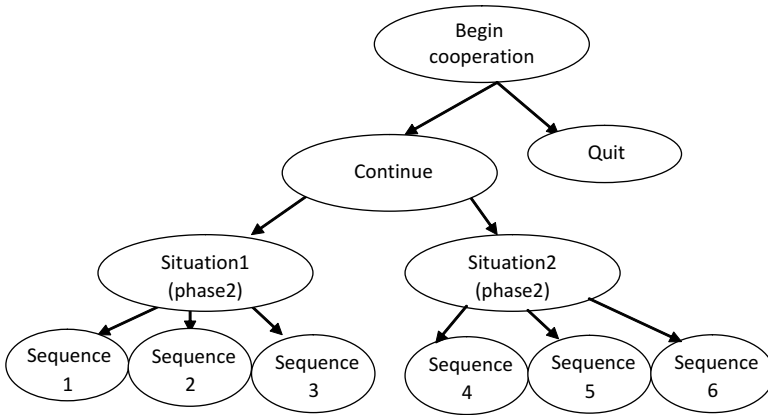


Fig. 10.3 Sequential decisions of participating farmers

form of clearing and take back capital and forest resource to a certain degree; if the condition turns out to be favorable, the participating farmers can continue their cooperation. At that moment, the participating farmers will face three decisions actively or passively depending on whether they have the control right. The three decisions are ① expend scale of investment (e), ② sustain current scale of investment (s), and ③ clear the firm (l). So the sequential decisions of participating farmers are shown as in Fig. 10.3.

Farmers quit in the form of clearing when the condition in the first phase is unfavorable, which represents the corresponding choice in the first phase. Then this article will use contingent governance mechanism to analyze the second phase based on two conditions, respectively.

10.5.1 Contingent Governance Mechanism Under Favorable Condition

Under favorable condition, there are three choices for the farmers and firms who sign cooperation contract with them. The three choices are ① expend scale of investment (e), ② sustain current scale of investment (s), and ③ clear the firm (l). Obviously,

under favorable condition, expanding investment is the optimal choice. At that time, the yield of cooperation satisfies

$$y_e > y_s > y_1 \quad (10.1)$$

Meanwhile, the yield of farmers and firms satisfies

$$\text{Participating farmers : } \beta y_e > \beta y_s > \beta y_1 \quad (10.2)$$

$$\text{Firms : } (1 - \beta) y_e > (1 - \beta) y_s > (1 - \beta) y_1 \quad (10.3)$$

In the aspect of the firm's yield, sustaining the current condition is the optimal choice. On the one hand, expanding investment requires the organizer to be more hardworking. On the other hand, liquidation organizations will lose all the yield.

$$y_{p(s)} > y_{p(e)} > y_{p(l)} \quad (10.4)$$

In this way, there will be two conditions happening in the firm's total yield:

$$(1 - \beta) y_e + y_{p(e)} > (1 - \beta) y_s + y_{p(s)} > (1 - \beta) y_1 + y_{p(l)} \quad (10.5)$$

or

$$(1 - \beta) y_s + y_{p(s)} > (1 - \beta) y_e + y_{p(e)} > (1 - \beta) y_1 + y_{p(l)} \quad (10.6)$$

Under the condition of Formula 10.5, that is to say, the yield of organizers expanding scale of investment (e) becomes the largest in these three choices. At that time, the organizer's expanding scale of investment meets the profits of participating farmers and organizers and also meets the overall profits of entrepreneurial forest professional cooperation, achieving the maximum social profit.

Under the condition of Formula 10.6, that is to say, the yield of organizers sustaining scale of investment (s) becomes the largest in these three choices. However, expanding scale of investment (e) meets the optimal profit of participating farmers. So there is a profit conflict between participating farmers and firms and agent cost arises. If the participating farmers have the control right, they will choose to expand scale of investment (e), and this action also meets the overall profit of the firm. However, if the firm has the control right, it will choose to sustain the current scale of investment (s), and in this way, the profit of participating farmers and the overall profit of two parties will be affected. So, under such circumstance, participating farmers need to claim the control right actively; otherwise, there will be a negative governance effect.

Meanwhile, the overlook mechanism of the participating farmers will play an important role in this process. Generally, the higher the overlook effectiveness is, the lower the possibility of company's nonfeasance. So, as long as the overlook mechanism can assure $(1 - \beta) y_e + y_{p(e)} > (1 - \beta) y_s + y_{p(s)}$, the profit conflict

between participating farmers and firms can be reduced effectively, and the goal of two parties can be unified. Then it can further promote governance efficiency and create a positive governance effect.

10.5.2 *Contingent Governance Mechanism Under Unfavorable Condition*

Under unfavorable condition, there are also three choices for the farmers and firms. The three choices are ① expend scale of investment (e), ② sustain current scale of investment (s), and ③ clear the firm (l). Obviously, under unfavorable condition, clearing the firm is the optimal choice. At that time, the yield of cooperation satisfies

$$y_l > y_s > y_e \quad (10.7)$$

Meanwhile, the yield of farmers and firms satisfies

$$\text{Participating farmers: } \beta y_l > \beta y_s > \beta y_e \quad (10.8)$$

$$\text{Firms: } (1 - \beta)y_l > (1 - \beta)y_s > (1 - \beta)y_e \quad (10.9)$$

In the aspect of the firm's private profit, sustaining the current investment is the optimal choice. On the one hand, expanding investment requires organizers to be more hardworking. On the other hand, organizers in liquidation organization will lose all their private profit.

$$y_{p(s)} > y_{p(e)} > y_{p(l)} \quad (10.10)$$

In this way, there will be three situations happening in the firm's total yield:

$$(1 - \beta)y_l + y_{p(l)} > (1 - \beta)y_s + y_{p(s)} > (1 - \beta)y_e + y_{p(e)} \quad (10.11)$$

$$(1 - \beta)y_s + y_{p(s)} > (1 - \beta)y_l + y_{p(l)} > (1 - \beta)y_e + y_{p(e)} \quad (10.12)$$

or

$$(1 - \beta)y_s + y_{p(s)} > (1 - \beta)y_e + y_{p(e)} > (1 - \beta)y_l + y_{p(l)} \quad (10.13)$$

Under the condition of Formula 10.11, that is to say, the yield of clearing the firm (l) becomes the largest in these three choices. At that time, clearing the firm meets the profits of participating farmers and organizers and also meets the overall profits, achieving the maximum social profit. And participating farmers and firms share the same goal, so the farmers do not need to claim the control right. This kind of

arrangement can effectively promote the growth of the firm and farmer's performance and optimize firm governance and then there will be a positive governance effect.

Under the condition of Formulas 10.12 and 10.13, that is to say, the yield of organizers sustaining scale of investment (s) becomes the largest in these three choices. However, clearing the firm (l) meets the optimal profit of participating farmers. So there is a profit conflict between participating farmers and firms and agent cost arises. If the participating farmers have the control right, they will choose to clear the firm (l), and this action also meets the overall profit of the firm. However, if the firm has the control right, it will choose to sustain the current scale of investment (s), and in this way, the profit of participating farmers and the firm will be affected. So, under such circumstance, participating farmers need to claim the control right actively; otherwise, there will be a negative governance effect.

Meanwhile, the overlook mechanism of the participating farmers will play an important role in this process. Generally, the higher the overlook effectiveness is, the smaller the private profit the organizer will gain. So, as long as the overlook mechanism can assure $(1-\beta)y_e + y_{p(e)} > (1-\beta)y_s + y_{p(s)}$, the profit conflict between participating farmers and firms can be reduced effectively, and the goal of two parties can be unified. Then it can further promote governance efficiency and create a positive governance effect.

10.6 Illustrative Examples, Cases, and Mapping

10.6.1 *Innovation Consciousness Versus Performance of Farmers*

It's an interesting topic to talk about the relationship between innovation and performance. Research findings suggest innovation has positive impact on performance (Dobni 2011). In the study of firms' level, Dobni (2011) indicates that the high-innovating firms had a positive relationship with the top-line growth and customer satisfaction and bottom-line growth and profitability. In this study, the positive relationship between innovation and performance is tested in farmers' level.

It has cases in China. The farmers in Xiangqian village of Zhenghe county of Fujian province have been relying on bamboo planting for a living. There is more than 134 hm² bamboo forest in the village. A single bamboo needs about two months to be fully grown, but it will take 3–6 years to be cut to use. For farmers, 3–4 years are needed for the bamboo shoots. Even under good condition, bamboo shoots only can sale like a kind of food in spring and winter; on the other seasons farmers just wait for them growing. In view of this situation, farmers began to consider their own advantages, and they found raising chickens under the forest is a good way to expand the use ratio of bamboo forest. Bamboo is thick, and the height can be as high as 20 m. Therefore, the environment under forest is more suitable for raising chickens. Simultaneously, the land condition is good for raising chickens because farmers turn the solid every year.

Based on these investigations, farmers innovate the operating mode of bamboo forest and call it *economy under forest*. There were five farmers who tried to raise about 2000 chickens at the beginning. The raising cycle of chickens is only 5–6 months. This short cycle can make returns faster, and it is good news for farmers. In addition, chickens raised under bamboos take longer time for stocking and have vigorous daily exercises. Therefore, the meat of chickens tastes delicious with high nutritional value. Chickens raised under bamboos get increasingly favor in the market, and the average income of farmers is 7,000 RMB.

This result has important implications to farmers. To improve the performance, farmers should use system policies, including improving the innovation consciousness according to education and set examples, cultivating proactiveness according to provide capital, technology service, etc.

10.6.2 Proactiveness Versus Performance of Farmers

Research findings in enterprise level suggest that entrepreneurial orientation of farmers has positive impact on operating performance (Nybakk and Hansen 2008; Lunnan et al. 2005). This study indicates that entrepreneurial orientation of farmers has positive impact on operating performance in individuals' level. In details, proactiveness has positive impact on operating performance of farmers.

It has cases in China. In the case of Zhenghe county of Fujian province, Cai, a young man of this village, raised chickens under bamboo forest. Simultaneously, he had cooperation with some scientific research, such as Shanghai Academy of Agricultural Sciences, Fujian Academy of Agricultural Sciences' animal research institute, and Fujian Agriculture and Forestry University on the production of feed additives. Stocking in a 'no pollution' area in the forest and foraging in fields formed the three-dimensional ecological farming area. It is useful to improve the chickens' immunity and improve all kinds of trace elements in chicken eggs, which especially contain trace elements of "selenium" which has good health-care effect to people. In January 2013, Cai had cooperation with 300 households around the village and used the pattern of *company + base + peasant household*; they rose together, managed together, and sailed together. There are more than 50,000 chickens now in this base. With the development of the base, raising chicken is becoming a good way to get rich. As a member of the base, Li provided 4000 baby chickens for the base in 2013, and got 80,000 RMB profit after the buying back. In 2013, the average revenue of these 300 households was 6000–8000 yuan in RMB. The production of the base is sold to Fuzhou, Xiamen, Hangzhou, and Shanghai, now with a good favor of customers.

This result has important implications to farmers. As far as farmers, with the lack of high technology, the one who has proactiveness would success with a good idea. After the spread of the success, more and more farmers will join in, and imitating behaviors would be found (Xue Yongji and Jia wei 2012). Therefore, when farmers have a good idea, he should put the idea into practice quickly. Simultaneously, farmers should choose entrepreneurial projects with low input compared to entrepreneurs of enterprises in other industries.

10.6.3 Risk Taking Versus Operating Performance

However, risk taking has no positive impact on operating performance of farmers. This shows risk taking is just the propensity of entrepreneurship, while risk has two sides. At one hand, it is necessary to take risks when taking part in entrepreneurial activities, and it is one part of entrepreneurship. At the other hand, risk means uncertain, and it shows the activities would be a success or fail in certain probability. Therefore, it has no significant impact on performance of farmers.

It has cases in China. Xianju is one of the earliest counties that cultivate bayberry in history. The ancient Chinese had a saying that *neither the litchi of Minzhe nor the grape of Xiliang could compare with red bayberry of Wuyue* (ancient saying of Zhejiang). In fact, villagers in Xianju only planted a local red bayberry, known as water bayberry. Because of the small output and low price, economic benefits are lower than other industries. Therefore, water bayberry was just used to be eaten or sent to other people as gifts (Shen Yingying 2010).

In recent years, the county government vigorously promotes the cultivation of red bayberry based on their nature advantages (Wang Xiaohuan 2011). The county is the most suitable area for the growth of red bayberry because it nears the coast with marine climate and has the typical characteristics of mountain climate. The Forestry Bureau of the county invited experts to graft the local red bayberry into Dongkui bayberry and improve the surface and taste of the new red bayberry. The government foresaw that the adjustment of industrial structure will bring opportunities, put forward the slogan *moving thousands of hectares of red bayberry up to the high mountains*. The government listed red bayberry industry as a key project to the reclamation of barren hills and the improving of planting structure. At the same time, the governments take 10 millions to subsidize the farmers who plant red bayberry and stimulate their enthusiasm.

This result has important implications to farmers. As far as farmers, they weren't able to take high risk because of the lack of capital compared to entrepreneurs of enterprises on other industries (Atmis et al. 2009). Therefore, farmers should make the risk of entrepreneurial activities low. Therefore, farmers should choose entrepreneurial projects which the government supports because the government provides interest-free loans, technology service, etc. to these projects usually.

10.6.4 Functions of Contingent Mechanism in Cooperation

Meanwhile, the contingent mechanism between firms and farmers consists of two mechanisms: control right mechanism and overlook mechanism. The control right mechanism refers to whether a party has the right to make decision and the overlook mechanism refers to effectively reducing the organizer's private profit. This kind of contingent mechanism affects the overall governance efficiency and whether it works out and the degree of the performance will also influence the governance effect. So,

this chapter suggests that (1) firms and farmers need to use cooperation mechanism which has several phases and enhance contingent design in cooperation mechanism to increase the effect of improving cooperation governance, (2) firms and farmers need to focus on the control right and the overlook right of the cooperation and negotiate on them, and (3) participating farmers and firms carry out their own control right and overlook right in the aspect of meeting overall growth and development and try to realize the maximum profit under the decision based on this aspect.

There are many successful examples in this field. In the morning of September 1, 2014, there is a promising situation in Dengpo village, Dujia town, Rong county. Hectares of *Eucalyptus grandis* grow greener and fresher after the rain. “There are four people in my family, and we own 20 mu of forest land. However, without the management, the land lied waste, with the income of less than 50 yuan per mu annually. In 2009, I cooperated with Sichuan Yuanseng Agriculture Limited Company and I became a shareholder in this company with my 20 mu forest right. Then the company helped me to grow fast-growing wood – eucalyptus grandis. And in the next year, when it came to the cutting period, every Mu was expected to has a dividend of more than 2000yuan. So in total, we can have a dividend of 40thousand yuan for 20 mu. Simultaneously, I am a cook in the company with salary of 1700yuan per month. The life condition is great,” Li Zerong, a farmer in Dengpo village, 11 suite, said with a smile on his face (Cao Xiangqian 2014).

Lin Kai, secretary of the party branch of village, told the reporter that 6 suites in Dengpo village together own more than 5000 mu of forest land. In reality, they manage 3800 mu of forest land and have issued 175 pieces of forest right certificate. With young people going out to work, a large number of forest lands lack management and cannot produce profit. In order to vitalize the forest land resource and promote farmers’ income, in 2009, this village brought in Sichuan Yuanseng Agriculture Limited Company and carried out the business mode of combining firms and farmers together. Farmers and firms cooperate to operate forestry business and to breed aquatics under afforestation. This company has gradually invested more than 9 million yuan to improve infrastructure, to cultivate 500,000 plants of landscape tree and *Eucalyptus grandis*, and to breed 10,000 Sichuan sheldrake under afforestation. The income will be divided into two parts: 78 % for the firms and 22 % for the farmers and the cooperation period will be 50 years. Meanwhile, the two parties agreed that Dengpo village and farmers in the specific forest area can get 5 yuan for management fee, respectively, every time the firm cut 1 ton of timber in this area. According to *Eucalyptus grandis*’ maturation and cutting period, in 2015, the firm can cut 3000 ton of timber. So at that time, Dengpo village and farmers related can get an income of 15,000. If the total income is 50 million yuan, the farmers can get 11 million yuan, that is to say, every mu can get an income of 2894 yuan.

In order to reduce conflict about forest boundary, this village gets the forest right back to the suite group and give every suite group a piece of forest right certificate, that is to say, 175 pieces of individual forest right certificate can be integrated into 6 pieces of united forest right certificate. The percentage of the share every farmer has will be listed on the united forest right certificate, but the specific location will not be. So the system determines the right and the share but not the location. When

there is a profit, the company will give suit groups their income according to the share in the united forest right certificate, and then the suite group gives the farmers the income they deserved. Now, farmers are actively participated in this kind of cooperation. The company also hired 200 farmers to do the seedling, to fertilize, to build the road, and to cut timber. And the daily wage will be paid according to working intensity from 60 to 110 yuan. Hu Zhengshui, a farmer in Dengpo village, 4 suite, told the reporter that he used to work in Guangzhou, but now he builds the road and cuts timber for the company. The company provides 3 meals for him and pays him 110 yuan per day. What's more, he also raises 80 black goats and 6 beefs, so his annual income is more than 100,000. It is better than working in Guangzhou!

Zhu Panhua, as CEO of Sichuan Yuanseng Agriculture Limited Company, told the reporter that when farmers become the shareholder of the firm and meanwhile work for the firm, the firm and the farmers turn up to be an interesting community. It is just like creating a "green bank." Every year we have trees to plant, timber to cut, and profit to receive. Also the total value of these 6 pieces of united forest right certificate is estimated to be 50 million yuan. Because the firm can get 78 % of the profit, the firm has an asset of 30 million yuan. In this way, the company can mortgage loan for 20 million yuan, so it will provide solid capital for the company to expand business. There will be a win-win situation after cooperation.

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Chapter 11

Eco-labeling, Visioning, and Integration

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Abstract China recently became the second largest economy and is increasingly playing an important and influential role in the global economy. Eco-labeled products will be of importance as natural resources grow scarcer and environmental concerns increase; however, there is still a question mark over whether eco-labeled product enhances the competitive advantage of a firm. An important development in China is the improvement of its commodity inspection system, which is primarily concerned with eco-labeled products. China is working hard to set strict commodity standards for all governmental institutions, private enterprises, and NPOs that manufacture eco-labeled products. Although optimal integration is widely recognized as essential to achieving good business performance, this goal is unlikely to be realized unless all involved parties share a product vision. This chapter represents the possible benefits and effects of actions consistent with shared vision and integrative capabilities on eco-labeled product marketing performance particularly in the China region. The total sample size was 203 respondents. Confirmatory factor analysis (CFA) and structural equation modeling (SEM) were used for statistical analysis. The results demonstrate that shared vision and integrative capabilities correlate positively with eco-labeled product marketing performance; however, shared vision does not have a positive correlation with integrative capabilities. Moreover, this chapter provides a framework for the management of marketing activities on eco-labels and closes with a discussion of the theoretical and practical implications of the research findings.

Keywords China • Eco-labeled product • Natural resource • Integrative capabilities • Shared vision • SEM • CFA

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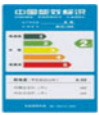



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11.1 Introduction

Over the last two decades, China has earned a reputation as the world's factory. Furthermore, China is growing, and it might be well prepared to be the world's largest economy. As shown in Table 11.1 (Eco-labels in China), the Chinese government and NPOs will become increasingly dedicated to eco-related activities, and more eco-labeled products will come to market. Eco-labeled products will be of importance as natural resources grow scarcer and environmental concerns increase; however, from the user perspective, a single eco-labeled product may simply represent a pure commodity, and users may not understand how to best utilize the product or its environmental benefits. Owing to consumer beliefs that eco-products are costly, users are remaining in observation mode until all product concerns have been resolved. Although eco-labeled products have markedly achieved significant environmental contributions, their commercialization faces challenges; uncertain marketing demands have caused considerable setbacks and financial difficulties for the eco-labeled product industry.

Table 11.1 Eco-labels in China

Organization	Eco-labels	Descriptions
China Eco-labeling		China eco-label is one of China certifications related to environmental performance of products. China Quality Certification Centre (CQC) is a professional certification body under China Certification and Inspection Group (CCIC) approved by State General Administration for Quality Supervision and Inspection and Quarantine and Certification and Accreditation Administration of the People's Republic of China
China Environmental Label		China Environmental Label was initiated by SEPA in 1993. It provides environmental standards for construction materials, textiles, vehicles, cosmetics, electronics, packaging, and more
China Energy Label		The China Energy Label (CEL) is an energy consumption label for products in China, similar to the EU Energy Label. Manufacturers of specified electronic devices are obligated to attach a CEL label to their goods to inform China-based consumers of the product's energy efficiency
China Organic Food Certification		This is an organic food and product label whose mission is to promote the development of organic agriculture and food in China
China Water Conservation Certification		Water conservation label for industrial products, agricultural products, residential products, unconventional water resource utilization products
China Energy Conservation Program		A voluntary program aiming to save energy and reduce emissions through stimulating manufacturers to produce more resource-efficient products and helping consumers to make more sustainable purchase decisions

Source: <http://www.ecolabelindex.com/ecolabels/?st=country.cn>

China recently became the second largest economy and is increasingly playing an important and influential role in the global economy. Rapid economic ascendance has brought on many challenges as well, including the challenges to environmental sustainability. With China's 12th Five-Year Plan, it highlights the measures to address environmental imbalances, setting targets to reduce pollution and to increase energy efficiency (China 2014). Global climate change is a severe environmental issue. Acidification of the oceans, extreme changes in weather patterns, and rising sea levels are, and will increasingly be, the results of such climate change and will have harmful and potentially irreversible effects on ecosystems (IPCC 2007). In China, the speedy economic growth has been accompanied by an unprecedented rise in energy consumption and associated CO₂ emissions (Chan 2012; Chen et al. 2010). Maintaining the balance between environmental and economic performance is more challenging in developing countries than in developed economies (Dong et al. 2014). However, there is still a question mark over whether eco-labeled product enhances the competitive advantage of a firm (Ambec et al. 2010; Wagner 2005).

Labels have been used for at least a century as means to inform consumers of special features of certain products or to warn consumers of possible impacts of particular products (Dawkins 1995). Rising consumer expectations regarding the most effective optimal deployment of eco-labeled products, associated with the growing influence of environmental protectionism, are making enterprises more concerned with how to reduce their environmental footprints using green energy, low carbon, renewable energy, and recyclable products, attracting enormous investment and driving the rapid establishment of numerous companies producing eco-labeled products (Hofman and Huisman 2012; Geels 2013). Although eco-labeled products have markedly achieved significant environmental contributions, their commercialization faces challenges; significant financial losses were suffered as a result of the global financial crisis during 2008–2009, and uncertain marketing demands have caused considerable setbacks and financial difficulties for the eco-labeled product industry (Fritz-Morgenthal et al. 2009). The growing number of producers of eco-labeled products requires comprehensive management to achieve effective strategic alignment and efficient resource use. Strategic alliances and mergers have been recognized as one of the best ways to optimize deployment of eco-labeled products (Lew and Sinkovics 2013; LED inside 2015a; Greenbang 2013); thus, an appropriate integration mechanism and marketing strategy have become the main strategy that firms use to ensure the survival and strong performance of eco-labeled products, and the effective integration of eco-labeled products thus is a priority for management.

The management of natural resources has recently become a significant issue; eco-labeled products will become critical as natural resources grow scarcer and environmental concerns become more intensified. Together with two conceptual routes, in the short term, eco-labels are expected to reduce environmental impacts by reducing sales of highly polluting products in favor of less damaging ones. Longer-term eco-labels are likely to stimulate producers to direct their research and innovation toward cleaner technologies. Albino et al. (2009) argued that companies are important in responding effectively and efficiently to environmental challenges

by adopting appropriate strategies and operations. Governmental organizations, academics, environmental groups, and businesses are committed to eco-labeled energy activities; in order to achieve the goal for environmental protection, eco-labeled products such as electronic devices, vertical farming, wind power, small-scale hydropower, solar energy, biomass power, light-emitting diode (LED), and smart home power/control systems have come to be widely available for commercial operations.

Some electronic application eco-labeled products have already come to be well developed and available commercially, including LED lighting, solar voltaic systems, solar hot water systems, wind and hydraulic power generator, DC drivers, etc. China is also attempting to decrease its reliance on oil for electricity generation by increasing its focus on coal, nuclear, natural gas, and renewable sources such as solar, wind, biomass, and hydro (China 2014). China already has the largest installed base of wind power globally (76 gigawatt at the end of 2013) and is the largest producer of photovoltaic modules. Eco-labels include natural energy processes that firms can harness and that cause little pollution, including wind, small-scale hydro, solar, biomass, tidal, wave, and geothermal energy. Eco-labels also include technologies designed to enhance energy efficiency. More eco-labeled products will be developed to replace numerous nonenergy-saving products and will soon dominate the market. Conversely, despite the promising business opportunities associated with eco-labeled products, the growth of such products is limited by a lack of effective integration. For example, with regard to solar energy and LED products in southern China, new firms focused on eco-labeled products have rapidly emerged, and there are now over 4,000 such firms (LED inside 2015a, b). However, in terms of economies of scale, economic scope, R&D capabilities, and production capacity, these products remain unable to compete with traditional products; consequently, some of these new firms are suffering financial losses and fighting for their survival.

11.2 Opportunities and Challenges for Eco-labels

Eco-labels enjoy clear opportunities but also must overcome challenges. Market-based studies exist that document the potential for eco-labeled products (Bjorner et al. 2004; Teisl et al. 2002). Moreover, most such studies also highlight that the effectiveness of an eco-label is influenced by the way relevant information is presented and the capacity of consumers to absorb and act on that information (Teisl et al. 2008); the research has stressed that producers can successfully signal credence qualities using eco-labeling as a third-party certification process – from a reliable certification agent that consumers can trust. From September 2003 to March 2006, the price of crude oil increased from USD 25 per barrel to a record high of USD 107.90 (Green 2006), which shows the potential for eco-labeled energy; certainly, eco-labeled energy will gradually reduce dependence on crude oil and will become increasingly crucial to overall energy consumption.

A 60 W traditional incandescent lamp costing US\$0.5–US\$1.0 can be compared with an LED lamp with the same output lumen that costs US\$5–US\$10.0, a price difference of 10 times (LED inside 2015a, b). From the user perspective, without further information, first, an eco-labeled product may simply be considered a commodity, and users may not understand how to best utilize the product or its environmental benefits. Second, based on consumer impressions regarding the cost of adopting advanced eco-products, users continue to observe the price trend until all potential product concerns have been resolved.

Although optimal integration is widely recognized as essential to achieving good business performance, this goal is unlikely to be realized unless all involved parties share a product vision. In such an environment, staffs have difficulty understanding the integration strategy, and team members cannot communicate effectively, making the new integration organization likely to be inefficient. Consequently, during the early stage of new department establishment, under the guidance of the overall strategy and the actions consistent with shared vision, product development managers should define an optimal integration mechanism for creating synergies based on external and internal resources, both of which facilitate product development.

11.3 Theoretical Framework

The increased global public awareness of ecosystem impacts of products has prompted the rise of a new body of labeling, often called eco-labels, green labeled or environmental labeled, to provide the necessary information for environmentally conscious consumers on products that have less environmental impact. Meanwhile, eco-label encourages manufacturers to be actively involved in environmental protection and pollution control by designing and developing environmentally friendly products (CCICED 1995).

An important development in China is the improvement of its commodity inspection system, which is primarily concerned with eco-labeled products. China's government imposes environmental regulations on all manufacturers. Manufacturers who meet environmental criteria will receive an eco-label. Table 11.1 shows the major organizations/associations that conduct eco-label inspections. China is working hard to set strict commodity standards for all governmental institutions, private enterprises, and NPOs that manufacture eco-labeled products.

In a dynamic and competitive market, the primary sources of competition are the threat of global warming, energy shortages, technological innovation, and economic globalization. These factors present enterprises with a global challenge yet have also created new markets and opportunities. In the face of competition, eco-labeled products have stimulated collaboration via strategic alliance and mergers that enable enterprises to overcome entry barriers and have become essential to growth (Cruz-Cázares et al. 2013). Effective collaboration in management enables organizations to adopt new cross-sector resources and ultimately boost product marketing performance.

Market-based studies exist that document the potential for eco-labeled products. Moreover, most such studies also highlight that the effectiveness of an eco-label is influenced by the way relevant information is presented and the capacity of consumers to absorb and act on that information; the research has stressed that producers can successfully signal credence qualities using eco-labeling as a third-party certification process – from a reliable certification agent that consumers can trust. A 60 W traditional incandescent lamp costing US\$0.5–US\$1.0 can be compared with an LED lamp with the same output lumen that costs US\$5–US\$10.0, a price difference of 10 times (LED inside 2015a, b). From the user perspective, without further information, first, an eco-labeled product may simply be considered a commodity, and users may not understand how to best utilize the product or its environmental benefits. Second, based on consumer impressions regarding the cost of adopting advanced eco-products, users continue to observe the price trend until all potential product concerns have been resolved. Furthermore, an extensive review of the case study reveals the following phenomena; first, a lack of supply chain integration and inappropriate vertical integration has negatively influenced product development. Without proper integration, such as through supplier chain integration, system solution integration, sales and marketing integration, and educating consumers on product use, eco-labeled products become simple commodities, and users cannot quickly understand their potential value. Second, firms invest capital and develop products alone; cooperation within supply chains is rare, and most firms focus on their core competences. This low integration is associated with low product development effectiveness. Currently, numerous potential problems thus exist, especially the failure to use resources efficiently.

11.4 Research Objectives

Based on the above discussion, this study attempts to achieve the following: First, this study examines the correlation of actions consistent with shared vision and integrative capabilities during eco-labeled product development. Second, this study aims to investigate the effects of actions consistent with shared vision on eco-labeled product marketing performance and, furthermore investigate the effects of integrative capabilities on eco-labeled product marketing performance.

Figure 11.1 summarizes the relevant constructs and represents the theoretical framework.

11.5 Why It Concerns Management

Figure 11.2 presents a popular eco-labeled product in a stadium, which includes an LED lighting system and uses 75 % less energy than traditional metal halide lamps. Such products help to protect the environment. However, the initial costs are more

Fig. 11.1 Research theoretical model

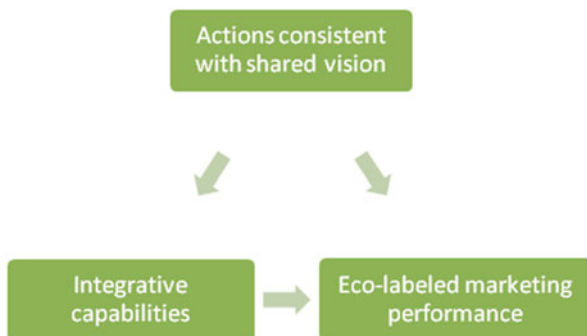


Fig. 11.2 LED lighting application (Source: <http://www.ledinside.com.tw/news/20150203-30698.html>)

than double or triple that of traditional lighting fixtures (LED Inside 2015a, b). Convincing customer to accept the higher cost of eco-labeled products is a hugely important challenge task for all governments. Source:<http://www.ledinside.com.tw/news/20150203-30698.html>.

Ambiguous product concepts increase speculation and conflict with regard to production. The concept of shared vision frequently describes shared values in a cooperative relationship, as well as mutual goals and understanding (Parsons 2002). In a new organization, psychological differences among parties strongly influence integrative capabilities. Shared vision thus creates a psychologically safe working environment for teams and clarifies developmental goals to members. For example, an acquired firm becomes more competitive if it shares a clear common goal with its parent.

Shared vision typically provides clear direction and targets in relation to the enhancement of integrative capabilities. In practice, individuals involved in product development should have a common vision shared by product team members and

high-ranking officers; otherwise, such participants may constantly question team objectives and seek to alter team goals and vision. Conversely, some extended studies regarding collaboration practices of design, marketing, and manufacturing personnel within a firm demonstrated that each functional area, or department, has their own perspective, generally derived from their task, expertise, etc., that makes cooperation difficult and frequently causes conflict and confusion (Dougherty 1992). This perspective on functional domains suggests that collaboration may not significantly or negatively impact performance if such differences are not properly administered and the vision sharing on product development among team members is not properly realized. Thus, the practice of internal collaboration alone does not guarantee integrative capabilities given different results in product performance.

The more a firm utilizes external entities such as suppliers and customers, the more likely it will develop effective processes that create firm-level shared vision and integrative capabilities (Lane and Lubatkin 1998). Extant studies also indicate that firms should integrate and utilize the complementary knowledge and skills that customers and suppliers possess to enhance their integrative capabilities (Chang et al. 2006). Verona (1999) observed that collaboration alone does not ensure product performance. Adopting a resource-based view of product development, Marsh and Stock (2003) contended that achieving the benefits of collaboration practices requires shared vision and the development of integrative capabilities. Internal organizations and departments with specific insights into market conditions and customers typically must coordinate and communicate in relation to external marketing trends, especially for products that require sophisticated functions and mass customization. Furthermore, team members are asked to share a common vision among departments, which results in a team with a common direction. Lack of such a common vision will cause the loss of their capability to create synergies among team members and ultimately in the failure to integrate resources internally and externally.

All the above studies have demonstrated that proper vision sharing will result in all team members heading in the same direction, working efficiently and effectively, and having positive relationships with their integrative capabilities. Based on the above discussion, this investigation thus adopts eco-labeled product enterprises as subjects to test the following hypotheses:

H1. The action consistent with shared vision correlates positively with integrative capabilities during eco-labeled product development.

11.6 Eco-label Marketing Performance

In practice, two phases have contributed to successful product development; the first phase involves the cultivation of creativity, R&D, and innovation, followed by the development of a physical product; the second phase involves product announcement, training, mass production, logistics, sales and marketing, etc. Collaboration is essential to these processes, and synergy is generated via a proper resource integration

process, which derives first from enterprise internal collaboration, also known as intradepartmental collaboration, and subsequently from the scope of the collaboration of external partners, which integrates resources among supplier chains and provides the more valuable products to customers to enhance customer satisfaction.

Rising customer demands in relation to eco-labeled product performance and environmental concerns originate from the simplest, purely function claim of rational appeal and then increase in social status with emotional and environmental appeals and carbon reduction claims, exhibiting different features of product specifications that boost customer demand; such demands begin with ideas, which are followed by screening, product definition, business analysis, and ultimately product development (Pujari 2006). A vision statement highlights intrinsic needs and links them to core organizational values. A clear vision is essential to successful business management. In modern business environments, product competitiveness requires cooperation among suppliers, research and development, production, sales and marketing plans, downstream sales channels, and support from management; in practice, this model resembles that used for eco-labeled products that focus on enterprise sustainability, product development, and competition at the global level (Wang et al. 2012); nevertheless, this model is even more competitive in the eco-label industry, because eco-labeled products deal with the risk, ambiguity, uncertainty, conflicts that arise from differing perceptions, and self-interests, such as existing non-eco-labeled products. In this situation, shared vision is considered an explicit rule to be communicated among team members, as well as being a management skill that can bridge the gaps among stakeholders.

Shared vision indicates a common background; a clear set of goals, priorities, and trade-offs; and a good understanding of both the product and the firm. In situations involving high ambidexterity, clear product objectives can discourage independent thinking and creativity (Revilla and Rodriguez 2011). The positive effects of shared vision include the ability to shape goals and directions. Shared vision is necessary for exchange because strategic resources can be identified and combined only if firms have systems and cultures that are sufficiently compatible to permit coordinated action. Shared vision generally involves a clear statement of goals, and company direction enables integration mechanisms to rapidly devise new products and ensure their development proceeds as scheduled. An R&D team responsible for target marketing is liable to lose direction without a common vision, and integration efforts may be offset by chaos, inefficiency, and poor management. A shared vision clarifies the direction, goals, and objectives associated with product development. To achieve the coordination required to effectively and efficiently process information and align functional perspectives with developmental goals, all involved parties must share a strong vision. In the current business environment, the success of new products requires cooperation among suppliers, R&D, production, sales and marketing, downstream sales channels, and upper management support.

Market success of eco-labeled products is essential to help companies and societies achieve environmental sustainability. A team responsible for collaboration must have a clear vision for efficient product marketing to enable the setting of reasonable product targets, which in turn can allow teams to improve business perfor-

mance. Firms seeking to improve their performance must improve their process collaboration, disseminate a clear vision, and instill that vision in all those involved in the aspects of the business related to the eco-labeled product. Based on the above analyses, this investigation argues that a shared vision is essential to performance in the eco-labeled product market.

H2. Stronger action consistent with shared vision correlates positively with eco-labeled product marketing performance.

Integrative capability comprises capabilities that permit firm to differentiate itself from competitors and results from critical management decisions (Tracey et al. 1999). The effects of integrative capability via marketing, R&D, manufacturing, suppliers, and customers originate from internal and external collaboration (Fain et al. 2011). Researchers have used several models in an attempt to analyze the performance of team members in interacting and collaborating with partners internally and externally. Particularly, previous investigations stress that the ability of a team to integrate resources by leveraging team processes is favorable to task completion (Garud and Kumaraswamy 2005; Wasko and Faraj 2000). The use of poor collaboration practices will not transfer the benefits of collaboration to product performance parameters, such as achieving high revenues and profits, and can have negative effects (Koufteros et al. 2005). Ineffective collaboration practices, which do not create core innovation capabilities, will not influence product performance. Johnson and Filippini (2013) also argued that the connection with greater product marketing success, e.g., the use of internal collaboration practices such as multi-functional teams or external collaboration practices such as supplier alliances, requires the mediating construct of integrative capabilities.

A well-organized integration management team provides all those involved in product development and marketing with clear objectives and directions. As stated above, research on eco-innovation and sustainable development innovation regarding R&D, production processes, new products, and new services has recently increased (Pujari 2006). Based on the above, we hypothesize that stronger integrative capabilities improve the overall success of marketing eco-labeled products.

H3. Stronger integrative capabilities in a process correlate positively with eco-labeled marketing performance.

11.7 Key Statistical Insights

11.7.1 *Sample Characteristics and Data Collection*

This investigation assessed the marketing performance of eco-labeled products at the product level. Eco-labeled product development denotes improvements in existing products, improvements in product functions, and the development of new environmentally friendly products. This study collected data from firms in Taiwan and

China. Among the 203 responding firms, 51 were from household appliance. Electronic equipment had 42 firms. Solar cell and LED related had 36 firms. Recycling energy had 19 firms. Cleaning up had 20 firms. Electric vehicle had 8 firms. Paper product had 18 firms. Others had 9. The questionnaire was e-mailed, posted to the online community, or hand delivered. Three tests were also performed to avoid bias resulting from CMV: the reversed item and time separation tests and Harman's one-factor test.

The constructs of the research were measured on a Likert scale from 1 to 5 using SPSS 21 and LISREL 9.1. Composite reliability (CR) was used to evaluate the internal consistency of each construct in the model. The average variance extracted (AVE) was calculated for each construct, and they were all well above 0.5. In addition to analyzing each construct individually, the CFA indicated that the measurement model fitted the data, $\chi^2/df=1.14$, GFI=0.95, NFI=0.96, CFI=0.99, SRMR=0.041, and the RMSEA index was 0.020 for this model, with a 90 % confidence interval between 0.0 and 0.039. All the model-fit indices exceed the respective common acceptance levels, demonstrating that the measurement model exhibited a fairly good fit with the data collected. The action consistent with shared vision was assessed using the established scale in terms of three key dimensions: shared product vision, intra-team trust, and credibility. The integrative capability construct reflects the ability of the firm to conduct high-quality eco-labeled product development and obtain market and technical knowledge. It is thus based on market knowledge competence and technical capabilities that stem from the development of a superior market orientation. Eco-labeled product marketing performance was adapted from previous empirical studies by Ko et al. (2013), which boosts corporate environmental image, reduces environmental protection impact, enhances customer satisfaction, increases firm market share, and increases consumer willingness to buy.

11.7.2 Structural Model Analysis

This study adopted the maximum likelihood and model path to explore the relationship between variables. We used path coefficient to measure the direct influence of the latent independent variable on the latent dependent variable; the latent independent variable possibly has indirect influence on the latent dependent variable through other variables. The causal structure of the hypothesized research model reflecting the assumed linear, causal relationships among the constructs was tested using a structural model. LISREL analysis was stated with the theoretical model. All of the model-fit indices of the structural model exceeded their respective common acceptance levels: χ^2 is equal to the degrees of freedom ratio of 1.078, GFI=0.95, NFI=0.97, CFI=0.99, SRMR=0.041, and the RMSEA index was 0.021 for this model, with a 90 % confidence interval between 0.00 and 0.041, suggesting that the model displayed fit the data well.

11.7.3 *Analysis for Proposition*

Shared vision does not correlate positively with integrative capabilities ($\beta=0.23$, t -value = 1.85), and thus the analytical results do not support proposition H1, namely, that the action consistent with shared vision is not positively correlated with integrative capabilities during eco-labeled product development.

Shared vision correlates positively with eco-labeled product marketing performance ($\beta=0.38$, t -value = 4.25, $p < 0.001$), supporting proposition H2. This analytical result is consistent with theoretical expectations; restated higher shared vision correlates positively with eco-labeled product marketing performance.

Integrative capabilities also correlate positively with eco-labeled marketing performance ($\beta=0.28$, t -value = 2.98, $p < 0.01$), supporting proposition H3. These analytical results match theoretical expectations; restated integrative capabilities correlate positively with eco-labeled marketing performance. An integration capability clearly indicates the ability of a firm to meet customer needs and is considerably related to product success and market performance. Thus, H3 is supported.

11.7.4 *Illustrative Examples, Cases, and Mapping*

Table 11.2 lists the most widely adopted logo indicating eco-labeled products, which clearly shows the immediate requirements in order to overcome the upcoming energy shortage and meet the demands derived from environmental protection concerns. In terms of environmental protection and living quality, the basic aim of eco-labels is to reduce the negative environmental impacts of products.

11.8 **Concluding Remarks**

The empirical data analyses do not support H1. Thus, the actions consistent with shared vision do not correlate positively with integration capability. Based on the above investigations, this study proposes the following analyses. Integration capability is based on effective management; employees need time to first cultivate such skills and then to internalize the associated implicit and explicit knowledge into their regular management process. Based on the above investigations, this study proposes the following analyses.

First, the main study sample comprised personnel involved in eco-labeled products. Based on interviews with senior personnel from case study companies, integrative capabilities in eco-labeled products primarily derive from product innovation, and R&D speed and the production of all of those activities are mainly the responsibility of the R&D, project leader, and production departments, together comprising 59.75 % of such work. Relative to administration, sales, and marketing personnel, R&D and production department personnel focus more on specific development

Table 11.2 Eco-label logo worldwide

Pattern	Eco-labeled name	Area country	Pattern	Eco-labeled name	Area country	Pattern	Eco-labeled name	Area country
	Ecolabel	EU		Green Seal	USA		Ekolabel Indonesia	Indonesia
	Nordic Ecolabel	North Europe		Good Environmental Choice Label	Australia		Green Mark	Taiwan
	Blue Angel	Germany		Environmental Choice New Zealand	New Zealand		EcoLogo	Canada
	Austrian Ecolabel	Austria		Japan Eco Mark	Japan		Korea Eco-Label	Korea
	Milieukeur	Holland		Green Crane	Ukraine		Thai Green Label	Thailand
	NF-Environment Mark	France		Environmentally Friendly Product	Czech Republic		Agriculture Biologique	France
	Vitality Leaf	Russia		Green Choice	Philippines		SustentaX	Brazil
	China Type I	China		Hong Kong Eco-label	Hong Kong		Eco Mark Africa	South Africa
	Green Label	Singapore		Coop Naturaline: Switzerland	Switzerland		Ø-label: Norway	Norway
	Ecomark	India		Nature's Best Ecotourism	Sweden		EKOenergy	Finland

Source: <http://www.globalecolabelling.net/>

targets, such as new technologies and enhanced manufacturing processes. Such personnel interact little with other departments or partners. R&D engineers can independently develop new techniques and repeat experiments until they achieve a concrete result; meanwhile, production managers primarily focus on efficiency improvement, and so interaction between internal partners is not necessary.

Second, regarding the personnel psychological effect, the synergies created through shared vision mostly rely on individuals volunteering. Managers cannot enable staff to devise a shared vision through administrative decree and vice versa. Even though staff may have low empowerment and be requested to rigidly follow policies and disciplines, the willingness of shared vision remains unrealized. In fact, such willingness may be far from the expected level. On the other hand, as described in previous studies, the integrative capabilities were typically based on market knowledge competence and technical capabilities and are based on the development of a superior market orientation. The integration capabilities mostly rely on appropriate management and training, capabilities that take time to cultivate. Once again, the statistical results are consistent with the above analyses suggesting that the action consistent with shared vision is not positively correlated with integrative capabilities.

11.8.1 The Actions Enhance Eco-label Success

Eco-labeled products are more expensive for consumers than traditional products. As discussed above, an LED lamp is 5–10 times more expensive than a traditional incandescent lamp (LED inside 2015a, b). As mentioned above, consumption behaviors are strongly influenced by psychological benefits and environmental concerns; without psychological benefits and environmental concerns, it becomes difficult to convince customers to buy eco-labels.

Besides heavy capital spending on equipment purchase and nurturing outstanding talent, enterprise management also requires a team with a shared vision. These empirical findings support the hypotheses that shared vision and integrative capability improve the marketing performance of eco-labeled products; thus, the results of the statistical analysis support H2 and H3, respectively. Technology can continuously improve quality of life given an appropriate vision and goals. Noble visions are responsible for some of humanity's greatest achievements. Similarly, technology can enhance quality of life and encourage goal achievement, which relies heavily on correct product vision and integrative capabilities. This investigation supports the view that the sharing of an ambitious common vision and integrative capability enhance eco-labeled product marketing performance.

An effectively disseminated shared vision clarifies the goals and direction necessary to the rapid development of product performance. Managers with high expectations regarding the improvement of marketing performance thus should adopt integration mechanisms and share clear objectives and directions with those involved in eco-labeled product marketing; restated, managers should consider not

only customers but also firm personnel, namely, team members, functional representatives, and high-ranking managers and those outside the firm, namely, suppliers.

Technology related to eco-labeled products has continuously enhanced marketing management performance by realizing specific envisioned goals followed by integrative capability; continuously pursuing a vision can realize excellent results. Shared vision thus crucially influences eco-labeled product marketing performance, as strategic alliances and merger integration alone are insufficient to improve eco-labeled product marketing performance without shared vision and integrative capabilities. Recognizing the vision sharing by team members is essential to the market performance of an eco-labeled product. Besides heavy capital spending on equipment purchase and nurturing outstanding talent, enterprise management also requires a team with a shared vision.

11.8.2 Managerial Implications

Strategic collaboration allows amalgamated companies to improve their integrative capabilities, when driven by a shared team vision, thus further enhancing marketing performance. A successful development process with collaboration practices requires the creation of integrative capabilities and shared vision. These processes show the importance of integrative capability and shared vision to the eco-labeled marketing success and that they are crucial to effective management to the pursuit of excellent operational efficiency given the global competition and an open global economy.

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Part V

Values

Chapter 12

Chinese Philosophy, Values, and Culture

Cheng-Liang Yang

Abstract Globalization brings managers not only opportunities but also challenges for adapting to the different national cultures. The author extracted the cultural essence from Chinese ancient texts such as *The Analects*, *Mengzi*, *Liji*, *Mozi*, and *Liezi* to construct a conceptual framework of Chinese philosophies and values. The Chinese values were empirically tested using the Rokeach Value Survey (RVS). The chapter indicates that Chinese culture is individualistic, collectivistic, and altruistic which differs from most previous literature that Chinese people are solely collectivistic. Some practical guidelines on how to establish and maintain good relationships with Chinese people are presented.

Keywords Chinese culture • Chinese philosophy • Chinese values • Confucianism • Rokeach Value Survey • Expatriate • *Guanxi* • *Mianzi* • *Baoda* • *Yiqi*

12.1 Introduction

Globalization has become the trend used by enterprises in order to survive in a competitive market. The removal of national protectionist trade policies, deregulation of international fiscal and monetary markets, and rapid advances in communications and distribution channels have contributed to the increasing numbers of organizations that have decided to expand their operations across international borders (Hutchings 2003). Companies go abroad for many reasons such as cutting labor costs, expanding to new markets, seeking new foreign products and services to sell, forming new partnerships, and advantageous free trade markets. Therefore, the assignment of suitable managers to such expansion of international businesses has become an important issue. Globalization brings not only opportunities but also challenges to the managers. A big challenge to managers derives from the need to adapt to the different national cultures. If managers neglect the cultural differences and see things only through their own eyes and perspectives, management will not succeed.

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China has been named as the world's hottest economy (Wang and Nayir 2006). The rapid economic development of China in the past two decades has led to the emergence of many multinational enterprises entering China. Foreign direct investment in China was at an annual average rate of 215 % during years from 1985 to 1994 (World Bank 1996). China surpassed Japan as the world's second largest economy in 2010. Moreover, it has overtaken America to become the biggest economy in the world in 2014, according to figures based on purchasing power parity (PPP) from the International Monetary Fund (Bird 2014). This development has caused an increasing number of expatriates assigned to China. To ensure the success of the multinational enterprises operating in China, it is crucial that the most qualified expatriates are chosen. However, a number of studies indicate a high failure rate of expatriates in China. For example, Lund and Barker (2007) suggested that the expatriate failure rate in China was as high as 70 %. The numerous failures can, in part, be attributed to the following: financial loss, early return, disruption of international operations, performance under-expectations, loss of business confidence, and damaged relationships to the host country market (Garonzik et al. 2000; Harzing 2002; Selmer 2002). The underlying reason behind the failures is mostly contributed to intercultural ineffectiveness, namely, the complexity of Chinese culture, difficult sociocultural adjustments to managerial roles, and different cultural practices relating to business issues. Although many studies have suggested Western managers to be aware of Chinese culture while working in China (Hutchings 2003; Lund and Degen 2010; Selmer 2006; Seak and Enderwick 2008), few studies explore the underlying Chinese values that affect this culture. For example, Seak and Enderwick (2008) indicated that Chinese have a business culture which relies heavily on *guanxi* (relationships). But they didn't explain where this culture comes from or how to create and maintain it while doing business in China. Obviously, if we know their underlying values, we can understand what Chinese people like to do and not do, as well as have the ability to infer their attitudes and behavior in a multitude of situations.

Chinese attitudes and behavior are influenced by the basic convictions or values of Chinese people. Moreover, these values are also affected by Chinese philosophies. Certainly, Confucianism is the most predominant Chinese philosophy, which affects Chinese people's lives and thinking. Nonetheless, there are still other important ideologies influencing Chinese people that were neglected by previous studies. Therefore, the objectives of this chapter are as follows:

1. Construct a conceptual framework of Chinese philosophies and values.
2. Test the Chinese values empirically by using the Rokeach Value Survey (RVS).
3. Explain the implications of the concepts underlying the conceptual framework.

12.2 A Conceptual Framework of Chinese Philosophies and Values

Chinese values are important and lasting beliefs of what is good or bad, desirable or undesirable, shared by most Chinese people. These basic convictions serve as general guidelines for Chinese people and affect their attitudes and behavior throughout

everyday life. Undoubtedly, Confucianism is believed to have crucial influence on Chinese values and has been discussed in much work (Hofstede and Bond 1988; Selmer 2001; Warner 2010; Seak and Enderwick 2008; Bond and Hwang 2008). The predominance of Confucianism in China came out in the Han dynasty (206 B.C.–220 A.D.) and was espoused by most rulers of following sovereignties. However, in Chinese societies, values emphasized by Chinese people are not solely based on Confucius’s philosophy. Many ideologies presented by scholars in pre-Qin dynasty (before 221 B.C.) still have a strong influence on Chinese thinking and behavior to this day, but it has been overlooked by previous studies. For example, during Warring States period (479 B.C.–221 B.C.), Mo Di’s and Yang Zhu’s ideologies with Confucianism formed the three major prominent parts of Chinese philosophies. This is evident in the Chinese ancient text, *Mengzi, Chap. Teng Wen Gong II*, which described that “The words of Yang Zhu and Mo Di fill the country. If you listen to people’s discourses throughout it, you will find that they have adopted the views either of Yang or of Mo.” (Chinese Text Project 2014).

The main purposes of Chinese people’s lives are to pursue perfect virtues, harmonious interpersonal relationships, and individual’s desires. These purposes reflect on values that are altruistic, social, and individual, respectively. These values are beliefs about desirable end states of existence that a person strives to achieve, which is similar to Rokeach’s (1973) so-called terminal values. Altruistic values originate from Confucianism’s *ren* (benevolence) and *yi* (righteousness) (Confucius 551–479a BC) and Mohism’s, i.e., Mo Di’s philosophical system, *Jianai* (universal love) (Mo Di 479–381a BC) and *Fei gong* (non-attack) (Mo Di 479–381b BC). It also can be expressed from Confucius’s ultimate objective, *datong shijie* (grand union of the world), that is, if an ideal society has been realized, people treat all things in the world in terms of equity, righteousness, and public interests; people value trustworthiness and cultivate harmony with each other, and nations get along peacefully (Dai Sheng 206 BC–8a AD). The altruistic values are humanity centered, considering not only one’s relatives and friends but also the human race as a whole. Social values come from Mohism’s *Jiao xiang li* (reciprocal favor) (Mo Di 479–381c BC) and from Confucianism’s *wu lun* (five cardinal relationships), namely, relationships of the ruler to ruled, father to son, husband to wife, elder brother to younger brother, and friend to friend (Dai Sheng 206 BC–8b AD). Social values are society centered, focusing on harmonious relationships. On the other hand, individual values are derived from Yang Zhu’s philosophy of *Guiji* (self-treasure) and *Wei wo* (self-interest). Yang Zhu suggested that one should follow one’s nature and behave according to one’s interest. Therefore, if prompted to pluck a hair from his body to benefit the world, he would not do it (because it would hurt his body) (Mengzi 372–289a BC). He also asserted that one should enjoy one’s life as one is alive. He further indicated that if we owned a gorgeous mansion, beautiful clothes, delicious food, and a charming lady, why should we pursue other things (Lie Yu Kou 475–221 BC)? Even Confucius also recognized that riches and honor are what men desire (Confucius 551–479b BC). The individual values are self-centered, concerning intrapersonal state.

Chinese instrumental values can be categorized as interpersonal and competent values, which are beliefs about desirable modes of conduct that facilitate the attainment of terminal values (Rokeach 1973). Interpersonal values stress the ways of realizing the altruistic and harmonious interpersonal relationships. The concept of altruism is similar to the indigenous Chinese concepts, *ren* and *yi*. Loving others is the way to practice *ren* (Confucius 551–479c BC). The root of *ren* is filial piety and fraternal (Confucius 551–479d BC). To carry out *ren*, one should be able to forgive, tolerate others, and see things from their eyes. That is Confucius's maxim: "not to do to others as you would not wish done to yourself." (Confucius 551–479e BC, f). Moreover, Confucius indicated that if given the choice between life and *ren*, one should sacrifice one's life and choose *ren* (Confucius 551–479g BC). The implement of *yi* is to do what is right (Dai Sheng 206 BC–8b AD). Mengzi also asserted sacrificing one's life and choosing *yi* (Mengzi 372–289b BC). On the other hand, for achieving harmonious interpersonal relationships, individuals should practice *li* (propriety) and *xin* (trustworthiness). *Li* is to not go beyond the rules (Dai Sheng 206 BC–8c AD). It implies that the relationships within the *wu lun* (five cardinal relationships) are mutual and one should properly behave according to one's relational position. For example, father to son: the father should love his son, and the son is filial to his father. One cannot live without *xin* (trustworthiness) (Confucius 551–479h BC). Honesty is a crucial condition to carry out trustworthiness. Those who are trustworthy are self-controlled, reliable, and responsible.

Competent values concern the abilities of satisfying an individual's desires. The competent values are intrapersonal and capacity oriented. Confucius indicated that riches and honor should not be obtained improperly (Confucius 551–479b BC); the man, who in view of gain, should think of *yi* (righteousness) (Confucius 551–479i BC). Those who are wise (*zhi*) are free from perplexities (Confucius 551–479j BC). For maintaining self-interest, Yangism (Yang Zhu's philosophical system) philosophers suggested that one should keep one's nature intact, protect one's uniqueness, and not tire the body by other things (Stalnaker 2006). Although Confucius and Yang Zhu didn't mention specific ways and only provided general guidelines, it seems to imply that those who have good characteristics such as broad-mindedness, intellect, capability, imagination, cheerfulness, and courage may have the abilities to satisfy their desires.

In summary, Chinese values are influenced by Confucianism, Mohism, and Yangism. The essences of Confucianism are the five constant virtues (*wu chang*) and five cardinal relationships (*wu lun*). The five constant virtues consist of benevolence (*ren*), righteousness (*yi*), propriety (*li*), wisdom (*zhi*), and trustworthiness (*xin*). The five cardinal relationships (*wu lun*) are comprised of the ruler to ruled, father to son, husband to wife, elder brother to younger brother, and friend to friend. The principal thoughts of Mohism are universal love (*Jianai*), non-attack (*Fei gong*), and reciprocal favor (*Jiao xiang li*). The main ideas of Yangism are self-treasure (*Guiji*) and self-interest (*Wei wo*), which constitute the primary source of Chinese individual values. However, these individual values have been given little attention in the literature. Other philosophies such as Daoism and Buddhism influence Chinese values as well. Daoism and Buddhism will not be discussed in detail in this

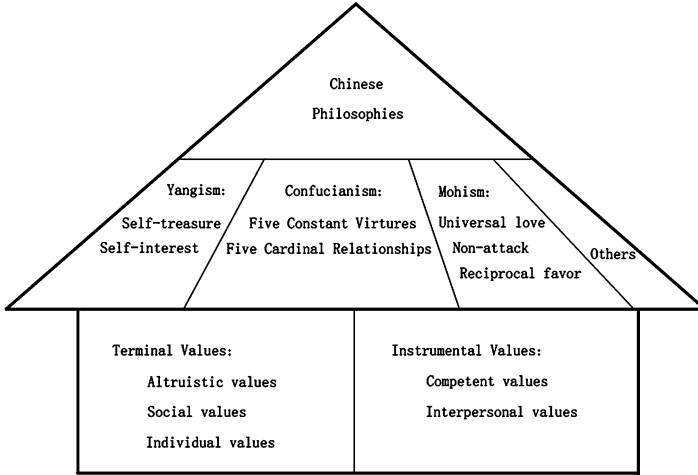


Fig. 12.1 A conceptual framework of Chinese philosophies and values

chapter because they contain similarities to Confucius’s doctrine of moderation (*zhong yong*, i.e., balance and harmony) and benevolence. A conceptual framework of Chinese philosophies and values is presented in Fig. 12.1. The Chinese values were tested empirically by using the Rokeach Value Survey (Rokeach 1973) and will be discussed in the following section.

12.3 Testing the Chinese Values Empirically

Values are universal in nature. No matter what the values scales are measuring, Western or Eastern culture, most of them are complementary and conceptually equivalent to each other (Bond 1996). For example, in the RVS, a world at peace and national security reflect humanism which is similar to *ren*; therefore, they can be classified as altruistic values. Since the RVS, which includes 18 terminal values (such as a world at peace, inner harmony, and an exciting life) and 18 instrumental values (such as politeness and intellect), is universal and commonly used in literature, I adopted the instrument rather than developing my own to measure Chinese values. However, most RVSs were conducted in Western culture, which may not reflect the important aspects of values in Chinese societies. Therefore, I employed Chinese subjects to derive the underlying value constructs and compare them with literature.

Three hundred thirty-three out of 446 total employees from a technology enterprise in Taiwan participated in the study. A ten-point scale anchored with the bipolar adjectives (1, extremely unimportant, to 10, extremely important) was used for rating the importance of terminal and instrumental values. Exploratory factor analysis (EFA) was used to identify the underlying Chinese values in RVS, and confirmatory factor analysis (CFA) was used to test the findings of EFA.

The results showed that in terminal values, altruistic values comprise salvation, a world at peace, a world of beauty, wisdom, equality, national security, and social recognition; social values consist of happiness, family security, pleasure, freedom, inner harmony, true friendship, self-respect, and mature love; individual values include an exciting life, a sense of accomplishment, and a comfortable life. On the other hand, in instrumental values, interpersonal values include politeness, responsibility, obedience, honesty, helpfulness, self-control, love, forgiveness, logic, independence, and cleanliness; competent values comprise capability, ambition, broad-mindedness, courage, imagination, intellect, and cheerfulness. Furthermore, these findings have been confirmed by using CFA. In other words, the Chinese values mentioned in the conceptual framework in Fig. 12.1 were empirically supported. Moreover, the current study presents that altruistic values are more apparent in Chinese than in Western culture and these values contribute a new dimension that complements those identified by the RVS literature. The current study's findings have important meaning and implications for managers and will be discussed in the following sections.

12.4 Individualism, Collectivism, and Altruism

The rapid rise of the Chinese economy has provided many business opportunities for multinational enterprises. However, if the managers expatriated in China have insufficient understanding of the Chinese culture and value differences, they cannot take full advantage of these opportunities. Selmer (1998) suggested that the traditional Chinese culture will shape Chinese organizational behavior and the management style of Chinese executives. Therefore, the managers assigned to China would have to make considerable adjustments to their work roles (Child 1994; Warner 1995). Perhaps a question managers may want to ask is: Is Chinese culture individualist or collectivist? This question is important because it will affect management practices. For example, if the country's culture is collectivism, the practices should concern groups instead of individuals. As Hofstede (1983) described, collectivism stands for a preference for a tightly knit social framework in which individuals can expect their relatives, clan, or other in-groups to look after them in exchange for unquestioning loyalty. On the other hand, he suggested that social framework in individualism is loosely knit and the individuals are supposed to take care of themselves and their immediate families only. In collectivist societies, a group's interests are of greater concern than individual ones. In contrast, people in individualist societies place their own interests and rights as greater than a group's well-being.

Most studies presented that Chinese societies are collectivistic (Hofstede and Bond 1988; Scarborough 1998; Matthews 2000; Lu et al. 2001; Zhang et al. 2005; Bond and Hwang 2008; Feldman 2014). The current study sustains this viewpoint as well. In the study, social values were proposed in accordance with Confucianism's *wu lun* (five cardinal relationships) and Mohism's *Jiao xiang li* (reciprocal favor).

This hypothesis has been confirmed by using CFA. Social values are society centered and focus on harmonious relationships within the society. For sustaining a stable society, Confucianism's *wu lun*, which represents five hierarchical relational structures, guides people to behave according to their positions. These relationships are based on mutual obligations and should be maintained in harmonious states. Obviously, under these relational structures, juniors should restrain themselves, respect the seniors, and overcome their individuality so as to keep harmony in the societies. Meanwhile, the seniors need to treat the juniors properly; otherwise, the harmony cannot be achieved. The mutual obligations between the seniors and juniors have been described in *Liji* (Book of The Classic of Rites): the father is loving to his son, and the son is filial to his father; the elder brother is gentle to his younger, and the younger is deferent to his elder; the husband is righteous to the wife, and the wife is submissive to the husband; the elders are kind to the juniors, and the juniors are obedient to the elders; the ruler is benevolent to the subjects, and the subjects are loyal to the ruler (Dai Sheng 206 BC–8a AD).

Chinese societies are collectivistic, but that does not mean that the Chinese people do not have individualistic perspectives as well. The current study shows that Chinese people not only emphasize inner harmony and true friendship (social values) but also value an exciting life and a sense of accomplishment (individual values). This finding implies that both collectivist and individualist perspectives simultaneously reside in the Chinese mind, which has also been supported in the current study by using CFA. Chinese people, in public, will behave according to social norms or external expectations, will conform in order to gain acceptance by groups, and will perform as an integral part of the relational structures. However, privately, or in their inner mind, personal desires are still alive. They want to pursue their self-interests and rights and live a comfortable and exciting life. Surprisingly, this viewpoint of individualism existing in Chinese societies was overlooked in previous literature. One of the reasons is that most previous studies (e.g., Scarborough 1998; Bond and Hwang 2008) recognized Confucianism as the only eminent ideology influencing Chinese societies. However, as mentioned above, Mo Di's and Yang Zhu's ideologies, along with Confucianism, have formed the three major prominent parts of Chinese philosophies during Warring States period (479 B.C.–221 B.C.). Particularly, Yang Zhu's philosophy of *Guji* (self-treasure) and *Wei wo* (self-interest) still has strong influence on Chinese individualistic perspective to this day. The other reason is the limitation of the instruments used to measure values through empirical survey. For example, Hofstede (2001) in the early 1970s conducted a work-related value survey of IBM employees worldwide. He developed an index using 33 survey questions to measure where various societies fell on the individualist or collectivist spectrum. Since the index is a bipolar continuum, with individualism at one end and collectivism at the other, it only reveals the degree to which individuals are integrated into the groups. In other words, people holding both the collectivistic and individualistic values cannot be accurately assessed by the index.

Altruism is preeminent in Chinese societies and is empirically sustained in the current study. Some previous studies have explored the underlying constructs of the RVS (e.g., Rokeach 1973; Weber 1990; Johnston 1995). However, none of them

extracted the altruistic aspect from the RVS. The reason perhaps is that most of them employed Western subjects and the tendency of altruism is not dominant in Western culture. For example, Rokeach (1973) only subclassified terminal values into personal values and social values, and Weber (1990) using factor analysis supported this classification. Furthermore, Johnston (1995) distilled the underlying constructs into individual and collective dimensions. Chinese people hold the tendency of altruism, which has implications in management practices and will be discussed in the following section.

12.5 Implications for Managers

Helping others and maintaining harmonious interpersonal relationships are significant components of culture in Taiwan, Hong Kong, and mainland China. This culture is derived from Chinese altruistic and social values and is facilitated through interpersonal values. It has been suggested that *guanxi* (Chinese indigenous concept similar to Western relationships) is important in Chinese societies, because having good *guanxi* with others will bring better opportunities and benefits over not having it (Matthews 2000; Nolan 2011; Lin 2011; Feldman 2014). Therefore, managers expatriated in Chinese societies are first advised to *jianli guanxi* (build relationships). However, building relationships should follow Chinese interpersonal values, particularly in practicing *li* (propriety) and *yi* (righteousness); otherwise, the relationships will not last. Some of my suggestions and practical guidelines on how to create and maintain *guanxi* are as follows:

1. Reciprocating favor: *Baoda* (reciprocation) has been recognized as an important manner to express *li* since ancient China. For example, *Liji* (Book of The Classic of Rites) says: “*Li* emphasizes reciprocity; if I give a favor and nothing comes in return, that is contrary to *li*; if the thing comes to me and I give nothing in return, that also is contrary to *li*.” (Dai Sheng 206 BC–8c AD). Mohism’s *Jiao xiang li* (reciprocal favor) holds the same meaning. Moreover, *Shijing* (The Book of Odes) says: “when a peach is thrown to us, we would return with a prune.” The favors may include not only such tangible materials as gifts or money but may also include intangibles such as services, consolation, encouragement, or spiritual support.
2. Selecting the right time: There is a Chinese indigenous concept *Bai matou* (visiting key persons). When newcomers are inaugurated at a new office, it is good to *Bai matou*, that is, to visit the key stakeholders such as officers, customers, agents, employees, local communities, and so on. It is a good time to start establishing relationships; the newcomers are not necessarily required to bring a gift to the stakeholders because they just want to show etiquette, respect, and emphasis to the stakeholders. However, it is appreciated to bring a small gift from their home country as well. Taking other occasions into consideration such as weddings, funerals, jubilant events, and celebrations helps to build and enhance

relationships. If the time is not right, visiting will be considered inappropriate etiquette.

3. Conscientiously choosing a Chinese name: A person's name in Chinese is not merely an identity of the individual but also conveys the family's expectation to the child. Therefore, the family is always very careful and serious when choosing special meanings to name their children. The expatriate managers can use their Chinese names as an opportunity to show their preference for Chinese culture, which will bring the managers and the stakeholders closer.
4. Establishing long-term friendships: Building *guanxi* doesn't just consider short-term's cost-benefit analysis. The expatriate managers should seize opportunities to offer favors without hopes of getting back immediate benefits. This helps to develop sincere friendships with the stakeholders. *Yiqi* (brotherhood spirit) is a specific character of Chinese people, which originates from altruistic values of *yi* (righteousness). If we are the stakeholders' sincere friends, they will be willing to do their best to help us if we encounter difficulties. They may even choose to sacrifice their benefits because Chinese people emphasize and hold a deep sense of *yiqi*.
5. Giving *mianzi* (face): *Guanxi* is always connected with *mianzi*. *Mianzi* (face) stands for an individual's ego or prestige in front of the public which the individual strives to obtain from others. If we don't give the stakeholders *mianzi* or make them lose *mianzi*, it will be impossible to build good *guanxi* with them. For example, if the key stakeholders invite you to have dinner and you reject the offer with no good excuse, the stakeholders will think you aren't giving face and will hurt their ego. Similarly, the managers should not criticize employees in public, even if they are not performing, because the managers will make them lose face. The proper way to handle this situation is to ask them to your office and tell them the truth privately.
6. Not relying on *guanxi* too much: Although *guanxi* is important for conducting a business venture in Chinese societies, don't put all your eggs in one basket. For instance, the critical people you depend on may leave the relationship network. Their *guanxi* may fade, or they may become a liability for using your name for self-interests. Good-quality products, reasonable prices, a friendly service attitude, and excellent after-sales service are still the key factors of a successful business.
7. Watching over your subordinate kinship: Family is the core social unit in Chinese societies. For example, Mengzi (372–289c BC) indicated that the root of the world is in the countries; the root of the countries is in the families. Wishing to govern countries well, we should regulate our families first (Dai Sheng 206 BC–8d AD). The individuals will look after their family's interests so as to enhance the family members' cohesion and harmony. In some joint ventures, nepotism has been a serious problem in China (Björkman and Lu 1997). Therefore, the managers should be aware of unqualified candidates that were recruited through their relatives' or friends' *guanxi*.

In general, Chinese culture is collective. The managers should pay attention more on groups than on individuals in management practices. For example, the organizational goals should be set for the whole team rather than the individual members of the team. In terms of motivation, the leaders should inspire the group in preference to individual morale; incentives should be given collectively and rewarded to the group rather than an individual to maintain harmony and avoid conflict within the group. Considering leadership, the style could be paternalistic, combining strong discipline and authority with fatherly benevolence and moral integrity.

Although maintaining harmonious relationships within a society is important in Chinese culture, it does not imply that the individual's desires have to be suppressed. The current study indicates that individual values such as having a comfortable, exciting life and a sense of accomplishment still exist in Chinese societies. Therefore, the managers should pay equal attention to satisfy these needs. For example, in public occasions, the managers should not always compliment a few specific individuals' merits (occasionally is fine), because the individuals will become targets and be supplanted by their colleagues (that is collectivism culture). Conversely, they should be prized privately in order to satisfy their sense of self-importance. It is also important to provide motivational factors for satisfying individuals' self-desires such as performance premiums, pay raises, bonuses, good benefits and working conditions, challenging jobs, a fair promotion system, and opportunities to exert their professional skills and realize their full potential.

The altruistic values derive from Confucianism's *ren* (benevolence) and *yi* (righteousness) and Mohism's *Jianai* (universal love) and *Fei gong* (non-attack). Particularly, *ren* and *yi* are the most important core virtues of Confucianism. *Confucius* and *Mengzi* encourage people to do what they ought to do, even sacrificing their lives. The managers should recognize that Chinese employees holding these values are more likely to care and help others and to present discretionary behavior that is not part of an employee's formal job requirements. Therefore, in management practices, if the managers can inspire the sense of honor and pride of the employees, even without organizational resources, they will willingly carry out organizational goals. Considering a reward system, it's not necessary to only use tangible rewards as payoffs for superior performance. The intangible or intrinsic rewards can be used as well. It is of worth for the management authorities to develop employee recognition programs ranging from private oral encouragement and thank-you card to publicized honorable behavior praise and recognition.

12.6 Conclusion

A conceptual framework of Chinese philosophies and values is presented in this chapter. These values have been empirically supported. Knowing these philosophies and values will make it easier for expatriated managers in Chinese societies to understand how to get along with Chinese people. The current study showed that

altruistic values are more apparent in Chinese than in Western culture, which results in Chinese people possessing a specific character, *yiqi* (brotherhood spirit). The managers may emphasize and utilize this character in order to build long-term friendships and benefits. In management practices, intrinsic reward systems can be developed to motivate employees and to preserve organizational tangible resources. Moreover, the managers should not overlook individual values, which still exist and are not restrained by Chinese societies. Providing motivation factors to satisfy the individuals' desires and fulfillments is necessary. While working in Chinese societies, building good relationships (*guanxi*) with stakeholders is crucial. However, it must be practiced under *li* (propriety) and *yi* (righteousness). The managers should not give bribes for maintaining *guanxi*, because it violates *li* and *yi*. We should note that giving *mianzi* (face) plays an important role in establishing relationships. However, Chinese people only desire to keep their *mianzi* in public; if reprimanded in private, their *mianzi* will not be hurt.

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Chapter 13

Yin-Yang Harmony for Management

Tachia Chin

Abstract Chinese culture is believed to represent the prototypical cultural values of many emerging markets in the Asian region. Compared with the West, Chinese culture places far more emphasis on *harmony*, a unique cultural characteristic and proclivity led by China's philosophical ideology. However, there is a dearth of research that could explicitly characterize how the notion of Chinese harmony influences employees' attitude and behavior in China. Hence, built upon the perspective of *Yijing*, the objectives of this chapter is to introduce a novel, context-specific indigenous model that delineates, conceptualizes, and even measures the abstract notion of harmony within a Chinese organization.

Keywords Culture • Yin-Yang • Harmony • China • Yijing

13.1 Introduction

Management is not universal. Reviews of cross-cultural management literature indicate that East and West are so distant in many of their philosophies and managerial practices and that it is increasingly important to identify the major differences in cultural idiosyncrasies of people from different countries.

China, with its gross domestic product (GDP) surpassing the USA's in 2014, has been seen as the largest economy in the world as well as a pivotal economic powerhouse in Asia. Chinese culture is believed to represent the prototypical cultural values of many emerging markets in the Asian region. Compared with the West, Chinese culture is well recognized to place more emphasis on *harmony*, a unique cultural characteristic and proclivity led by China's philosophical ideology (Chin 2014, 2015; Hofstede et al. 2010). The notion of Chinese harmony is at the earliest originated from *Yijing*, the wellspring and major source of all Chinese philosophical thinking, especially for the two mainstreams, Confucianism and Daoism. Chinese Communist Party (CCP) leadership has also declared a national priority to "building

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a harmonious society,”¹ which further specifically highlights the value of *harmony* in China. In sum, *harmonious culture* embodies one of the most precious humanistic caring and sharing virtues in China, symbolizing a unique “collective mental programming” of Chinese mind-set.

However, although scholars acknowledge the influential power of the concept of *harmony* on Chinese employees’ attitude and behavior, there is a dearth of research that could explicitly characterize how the notion of Chinese harmony is mirrored through organizational members’ perceptions. Hence, built upon the perspective of *Yijing*, the objectives of this chapter is to introduce a novel, context-specific indigenous model that delineates, conceptualizes, and even measures the abstract notion of harmony within a Chinese organization.

The remaining of this chapter is organized as follows. First, we provide a conceptual overview. Second, we expound on the eight dimensions of the proposed model of Chinese harmony from the *Yijing* perspective. Third, one short case example is given to further illustrate the applicability of this model in practices. Finally, we draw a conclusion emphasizing why our model of Chinese harmony is highly related to modern management.

13.2 A Conceptual Overview

13.2.1 *Harmonious Culture in Chinese Organizations*

“Harmony” has been recognized a predominant cultural idiosyncrasy of Chinese people, as well as a core value of the Chinese mental software (Hofstede et al. 2010). Evidence reveals that the Chinese, with a distinctive mode of holistic and all-encompassing thinking, tend to maintain harmony not only at individual level, but also at interpersonal and group levels (Chin 2015). This *harmony* dominance of Chinese culture seems to ascribe primacy to reciprocity, interdependence, and inter-relatedness among individuals, not the individual themselves. Hence, the notion of *Chinese harmony* involves a broader context—even including the entire universe in light of *Yijing*. According to the CCP’s claims, an ideal organization/firm should be a harmonious unity in which people of differing talents and professions occupy their proper jobs, perform their proper functions, and are all equally satisfied and not in conflict with one another.

As far as business is concerned, a large body of literature has manifested that Chinese people express great concerns over achieving *harmony* in organizations (Hofstede et al. 2010; Chin 2014, 2015). Compared with the Western corporate governance system where the organizational structure and position designs are generally impersonal, the Chinese managerial system where maintaining interpersonal harmony is the top priority often allows some jobs and works tailored to specific persons due to *guanxi* influence. In short, *harmony* can be seen as an important essence of Chinese management culture.

¹<http://www.washingtonpost.com/wp-dyn/content/article/2006/10/11/AR2006101101610.html>

As noted earlier, this Chinese harmonious culture is at the earliest derived from *Yijing* and is comprehensively decoded by the eight-trigram model at the heart of *Yijing*. Therefore, in the next section, we explain the art-based approach first, then provide a brief introduction about *Yijing*'s eight-trigram model, and finally illustrate how the art-based method characterizes the fundamental elements of Chinese harmonious culture as reflected in the eight trigrams.

13.2.2 An Art-Based Approach to Chinese Harmonious Culture

Given dramatic changes have taken place globally, the managerial tools of traditional logic and rationality sometimes become less appropriate for an increasingly complicated business world in the twenty-first century. An art-based perspective, therefore, may provide novel, innovative, and spontaneous ways for executives to manage contemporary organizations, whereas art-based methods are believed to facilitate organizational development through enlightening human's awareness and encouraging human's creativity (Taylor and Ladkin 2009). For instance, the organizational aesthetics, a study of sensuous knowing with several key elements such as lightness, intuition, and imagination, is inclined to be art rather than logic or rational thinking. Hence, in management practices, the rising use of art-based approach has been emerging in recent years.

Adler (2006) has demonstrated that the art-based methods as part of broader cross-fertilization between business and the arts could inspire business leaders to dig out their individual potentials by learning courage from the art—the courage to see reality, to envision possibility, and to bring reality to possibility. Tung (2006) further points out an essential difference between North American and East Asian management practices, that is, East Asian executives continue to perceive management more as an art rather than a science in contrast to North American.

Consistent with the abovementioned viewpoints, research has highlighted the unique art orientation embedded in Chinese traditional wisdoms, philosophies, and culture (Chin 2014, 2015). The classical Chinese literature is always written in a fairly poetic, artistic, and figurative way. The saying and writing of Chinese philosophers are imbued with poetic but disconnected apothegms, aphorisms, or allusions. This distinctive semantic space makes Chinese literature and culture to be more suggestive and less articulate (Fung 1948). Therefore, readers have to use their abundant imagination and intelligence to decode the real meaning and wisdom inside and outside the old texts when reading Chinese classical philosophies and literature.

Echoing the foregoing discusses, Chin (2014, 2015) has based on the art-based approach to elaborate on how the eight-trigram model of *Yijing* characterizes the Chinese notion of harmony at workplace. More specifically, her research used imagination to integrate the theoretical insights distilled from the ancient text about the primary eight-trigram model of *Yijing* with the metaphoric implications beyond the text and whereby concretized the abstract concept of harmonious culture in Chinese management.

13.2.3 *The Eight-Trigram Model of Yijing*

The most ancient text of *Yijing* is believed to be the origin of Chinese characters, created by the Chinese legendary emperor, Fuxi (c. 2800 BCE). Through observing the change pattern of the nature, Fuxi drew eight trigrams constituted by a combination of three Yin (a broken line) or Yang (an unbroken line) elements each to portray eight primordial energies/sources in the universe (e.g., Heaven, Lake, Fire, Thunder, Wind, Water, Mountain, and Earth, respectively) (Chin 2014; Fung 1948). This eight-trigram model is the primary framework elucidating the central theme of *Yijing*. By uniting any two of the eight trigrams into one set (hexagram), *Yijing*'s fundamental paradigm composed of 64 hexagrams in total was obtained. The statements of these 64 hexagrams epitomize a unique system of *Yijing* that deciphers all cosmic processes and interprets their correlations and meaning for the human realm.

According to Chinese history, the *Yijing* (the Book of Changes) has evolved from a divination book written around 3,000 years ago into the most important cultural scripture of all major Chinese philosophies. This is actually attributed to tremendous and continuous supplementary works done mostly by Confucian and Daoist scholars, given they had kept giving *Yijing* more multifaceted interpretations, ranging from moral to metaphysical to cosmological implications for several dynasties. The thought of *Yijing* was also spread by Chinese Diaspora throughout Asia, such as Japan, Korea, Singapore, Indonesia, and Malaysia, and has been translated into Western languages in 1950.

13.2.4 *How the Eight Trigrams Characterize Chinese Harmonious Culture*

According to *Yijing*, the eight trigrams are analogous to “symbols” where the particular semiotic denotations and connotations should be interpreted by the distinctive archetypes consisting of different numbers of Yin and Yang elements within them. Such symbols are similar to what in symbolic logic are called “variables” in the West (Fung 1948). More specifically, a trigram, just like a variable, can function as a substitute for a class or a number of classes of tangible and intangible objects. The eight-trigram model virtually forms a formula (“*Dao*” in Chinese) delineating the changing and transformation processes of all persons, objects, and things in the universe. In other words, the eight trigrams that represent the essential features of the 64-hexagram paradigm can be used to signify a variety of energies, processes, or spirits activating the world we live in. For instance, the eight trigrams were famously used to analyze the medical effects of various Chinese herbs. That is how it characterizes *harmony* as well.

Consistent with the above points, Chin (2014, 2015) employed the art-based method, using imagination and creativity to extend the denotative meanings of and distil the connotative meanings implied in the eight trigrams. The basic interpreta-

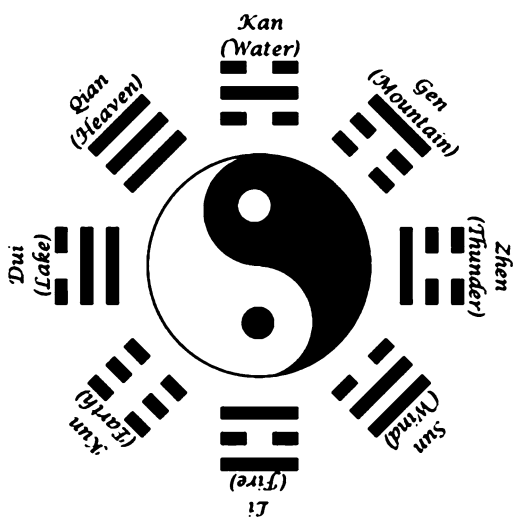
tions of the eight trigrams in her research refer to a well-known interpretation edition to *Yijing*, namely, the “Formal Interpretation of *Yijing*” written by Kong Yingda in Tang dynasty, as exemplified in the Table 13.1 and Fig. 13.1. Then she proposed a novel, context-specific eight-factor model demonstrating how the eight trigrams symbolize *harmonious culture* at workplace in China.

Table 13.1 The symbolic meaning concerning harmonious spirit of the eight trigrams

Name	Symbolic meaning
<i>Kun</i> (Earth)	Its spirit means to yield, serve, and bring forth the new as soft and generous as the Earth
<i>Xun</i> (Wind)	Its spirit means to be gentle and humble and penetrate things from below, just like the way the wind kisses the grass
<i>Li</i> (Fire)	Its spirit means to cooperate together with warmth and draw on other people’s help to achieve goals, just like the way burning woods bring brightness
<i>Dui</i> (Lake)	Its spirit means to spread joy and conduct profitable transparent exchange and cheerful interaction, just like a lake of clear water
<i>Gen</i> (Mountain)	Its spirit means to still or stop things, following the rules with good discipline, as firm and solid as mountain
<i>Kan</i> (Water)	Its spirit means to dissolve things and overwhelm obstacles in danger of stagnation as brave as rapidly flowing water (torrent)
<i>Zhen</i> (Thunder)	Its spirit means to inspire courage to burst forth from below, raising confidence to take risks, just like surviving a lightning thunder
<i>Qian</i> (Heaven)	Its spirit means to persist and strengthen creative inner power through deep contemplation, so as to take positive actions toward a greater network in the world, mirroring a heaven-daring spirit

Source: Table 13.1 is cited from Chin (2014)

Fig. 13.1 The eight-trigram diagram



13.3 How the Eight Trigrams Characterize Harmonious Culture

We specify how the eight dimensions of Chin's (2014, 2015) model characterized by the core spirits of the eight trigrams embody Chinese harmonious culture at workplace, respectively, as follows (all indicators/items and corresponding explanations refer to Chin (2014, 2015):

1. "Harmony of an employee with himself/herself" characterized by the trigram "Kun"

Kun's spirit is to yield, serve, and bring forth the new as soft and generous as the Earth, which reflects the value of developing self-harmony in organizations. There are four items for measuring this factor (i.e., an employee's self-discipline, self-cultivation, work's completion, and care about work environment).

2. "Harmony of employees" characterized by the trigram "Sun"

Sun's spirit projecting the image of Wind is to be gentle and humble and permeate objects or things from below as the way wind kisses grass, which highlights a feasible way to make friends with colleagues from diversified backgrounds and the values of being polite, supportive, and modest at workplace. Four items are used to assess this factor (i.e., colleagues maintain harmonious work atmosphere and good relationships outside work, help each other, and exercise fair competitions).

3. "Harmony of an employee with his/her team" mirrored by the trigram "Li"

Li's spirit symbolizing the image of Fire is to hold passion in cooperation with others and cherish the value of collective effort, just like how burning woods bring lightness and warmth, which reflects the importance of benefiting from others' assistance to fulfill both personal and common goals. Four indicators are used to measure this factor (i.e., the work team has a cooperative spirit, doesn't play politics, views the team's common interest as the priority, recognizes each member's role).

4. "Harmony of an employee with his/her direct boss" characterized by the trigram "Dui"

Dui's spirit projecting the image of Lake is to spread joyfulness and conduct transparent exchanges and cheerful interactions as a lake of clear water, which sheds light on the value of treating subordinates with justice and sincerity on creating a harmonious subordinate-boss relationship. Four items are used to evaluate this factor (e.g., the direct boss bases on performance rather than "guanxi" to do appraisals, doesn't steal subordinates' contributions, allocates rewards with impartiality, cares about subordinates' daily life).

5. "Harmony of an employee with managerial system" mirrored by the trigram "Gen"

Gen's spirit symbolizing the image of Mountain is to pacify emotion or stop things as solid as mountain, which underscores the importance of strengthening proper disciplines and enacting sound regulations. Four items are used to measure this factor (i.e., the company has a fair wage system and welfare and reward systems and provides social insurance). This spirit not only propels employers to build competitive managerial systems but also urges employees to comply with them.

6. “Harmony of departments” characterized by the trigram “Kan”

Kan’s spirit projecting the image of Water is to penetrate deeply into all things and overcome obstacles as fast and daring as torrent, which highlights the importance of resolving disagreements and enhancing understanding between different departments in an organization. There are four indicators for assessing this factor (e.g., the company has regular cross-department meetings, job rotation scheme, as well as fair resource allocation to departments and encourages cross-department cooperation).

7. “Harmony of an employee with the highest leader” characterized by the trigram “Zhen”

Zhen’s spirit projecting the image of Thunder is to inspire courage to burst forth from below as surviving a scary thunderstorm, which underscores the imperative for leaders to gain respect from followers and build confidence to confront risks. Four indicators are used to measure this factor (i.e., a leader’s empowerment to and understanding of employees and a leader’s acceptance of and respect for different opinions from employees).

8. “Harmony between internal and external organizations” characterized the trigram “Qian”

Qian’s spirit projecting the image of Heaven is to strengthen creative inner power and physical potency with persistence, which points out the value of taking actions to establish a deeper intimacy and connection in the world, as having a heaven-daring spirit. Four items are used to assess this factor (i.e., the company complies with the business ethics in competing with rivals and dealing with clients and suppliers and keeps openness and transparency to all employees). This spirit could drive an organization to quest for a kind of superior and radical harmony, establishing both internal rapport and external articulation.

In sum, the abovementioned analysis demonstrates that the cognitive harmony by employees in Chinese organizations indeed characterizes the concept of harmony derived from the eight-trigram model decoded by the Yin-Yang dynamics in *Yijing*.

13.4 Applicability of the Harmony Modeling Practices

In previous sections, we have elaborated on the differences concerning the notion of harmony between Chinese and Western cultures and how the eight trigrams of *Yijing* characterize the essential eight elements of Chinese harmonious culture at workplace.

As the world is getting increasingly globalized, the ability to manage cultural differences has been seen as one of the most critical skills for global managers nowadays. When more and more multinational companies is viewing China as a fruitful market, it becomes vital for foreign investors to fine-tune Chinese culture, so as to manage workers effectively in this context. Cross-cultural learning is significantly related to innovation, creativity, and, most importantly, a firm’s success. Hence, the new concept introduced in this chapter would be very helpful for executives, particularly those expatriate managers, to comprehend the art-oriented,

dynamic nature of Chinese harmonious culture at workplace, whereby they are able to enhance organizational efficiency through intensifying the harmonious spirit of employees.

To further illustrate the connection between Chinese harmonious culture and management practice, below we provide a case about how this novel concept may facilitate foreign managers to better understand their Chinese subordinates.

13.4.1 A Case Example

Lisa Zhang,² a female Chinese aged 33, was an assistant manager in charge of several main products' procurement in a UK-invested enterprise providing electronics manufacturing service in Guangzhou, China. She had worked in the company for more than 8 years. Lisa had felt very happy with her job as well as the harmonious relationships with her colleagues until a new manager, David Miller, a British guy who came to work in China for the first time, took office 6 months ago.

Her former boss was Mr. John Liu, a Chinese Canadian, who used to ask subordinates to hang out together at spare time, enjoying KTV or just having casual chats about a variety of topics such as dating, kids, or personal issues. In addition, John had maintained a very good and close *guanxi* with major clients and suppliers. Therefore, many suppliers were used to visiting and treating Lisa and her team quite often and always brought cookies, cakes, or small gifts for them in the past.

Unlike John, David was emphatic in his belief that people should share enough quality time with their families, and therefore, he rarely spent leisure time with his work colleagues. Sometimes, he might even turn off his mobile phone after work. Moreover, David disliked suppliers to treat or give his team members gifts and become too close to their counterparts/contacts, given this could result in being suspect of corruption and bribery. As he was saying to the suppliers at the annual supplier conference, "we are working together but we won't tolerate any kind of unethical behaviors."

Although David's integrity was acclaimed, Lisa didn't feel as happy as the time she worked with John. "The lack of sufficient interpersonal contact in our team has impaired the harmony among coworkers." Lisa said, "John used to make us feel like a family or intimate friends, but now David is merely a polite colleague and boss." "In fact, some Chinese suppliers have become less supportive and are raising complaints since they felt David doesn't intend to build harmonious *guanxi* with them."

13.4.2 A Short Case Analysis

This case highlights the cultural differences on the notion of harmony between Chinese and Westerners and particularly addresses the impact of Chinese harmonious culture on employee attitude and behavior. Further analyzing the scale of

²All names in this case are disguised.

Chinese harmony mentioned in the previous section, we could see that the scale is actually composed of many separate constructs in terms of Western organizational behavior theories, such as organizational justice, leadership, and satisfaction. Relative to the Western concept of harmony, Chinese harmonious culture encompasses a larger and more complex spectrum of tangible and intangible elements, involving not only dialectical thinking but also holistic and dynamic thinking. In other words, the Chinese may regard all relevant values, traditions, and practices as part of harmonious culture. Hence, as reflected in the case, whether there is harmonious relationship with coworkers and harmonious Guanxi with suppliers indeed affects Lisa's perception of harmony at workplace.

13.5 Conclusion

This chapter introduced an art-based method to understand how the *Yijing's* eight trigrams characterize Chinese harmonious culture at workplace. It displays a novel kind of "East-West" integrative thinking, signaling an openness to see the wisdom embedded in Chinese harmonious culture and to connect it to the management practice. Also, it implicitly suggests that global managers should approach cultural differences and accept distinctive cultural idiosyncrasies instead of being frightened by them. After all, cultural learning can foster innovation and creativity. A successful entrepreneur in the twenty-first century needs to possess a revolutionary way of mental programming that enables him/her to digest diversified knowledge obtained from different cultures.

In sum, the ascendance of China in recent years has presented an amazing opportunity for developed countries to challenge the conventional Western philosophies and theories pertaining to management. Viewed from this angle, it appears to be very imperative for global managers to further explore this unique Chinese harmonious culture with its art-oriented, dynamic nature and, most importantly, how it concerns developing business in China.

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Chapter 14

Destructive Leadership, Employees' Voice, and Organization

Hai Li and Jinqiang Zhu

Abstract In China, when employees are questioned by leaders, they tend to keep quiet or echo, which is harmful for the development of the organization. We try to explore how destructive leadership influences employees' voice behavior. Does the relationship between destructive leadership and employees' voice behavior depend on employees' personal values?

This paper focuses on analyzing the role of perceived organizational cohesion and conformity value in the relationship between destructive leadership and employees' voice behavior. About 259 valid samples were eventually collected. We used SPSS22.0 and LISREL8.7 to analyze the data by correlation analysis, regression analysis, CFA, and SEM.

The results show that destructive leadership negatively relates to an employee's voice behavior. Additionally, perceived organizational cohesion fully mediates the relationship, and employees' conformity value moderates the relationship between destructive leadership and perceived organizational cohesion. The relationship is stronger when employees' conformity value score is higher.

We reveal the mechanism of destructive leadership that influences voice behavior in view of the leadership behavior, perceived organizational environment, and employees' voice behavior. We determined the moderation effect of conformity.

Keywords Leadership • Management skills • Employees behavior • Destructive leadership • Perceived organizational cohesion • Voice behavior • Conformity

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14.1 Introduction

The environment that organizations face is becoming increasingly dynamic, complicated, and competitive. In this situation, managers alone have been unable to solve all the problems organizations have faced (Li et al. 2009b). Therefore, it is very important for the survival and development of organizations to make the best of employees' wisdom and to encourage them to actively participate in the management. An employee's voice, which is a way for the employee to participate in management, not only can improve an employee's work engagement, role performance, and creativity (Cheng et al. 2012; Ng and Feldman 2013) but can also enhance decision quality and management efficiency (Duan and Zhang 2010) because employees are closer to the market and learn more about customer demands. Reasonable advice given by employees can inspire strategic thinking in organizations, improve the business process and decision efficiency, prevent crises, and improve organizational efficiency (Yan and Huang 2012). At the same time, an employee's voice is a source of organizational innovative ideas and is helpful in maintaining and promoting organizational competitiveness, and it has been taken into account by more and more scholars and managers (Zhou and Long 2012). In fact, the importance of an employee's voice was realized before the modern times. Confucius put forward the motto of "just as bitter medicine cures sickness, so unpalatable advice benefits conduct" as early as the Spring and Autumn period. This motto is an instructive anecdote about voice that Wei Zheng, an official, suggested to Li Shimin, an emperor in the Tang Dynasty. The fairy tale of *The Emperor's New Clothes* warns that we cannot turn a blind eye to the mistakes of leaders, but should instead dare to point out the mistakes of leaders.

However, employee's voice behavior is rare in reality. Many employees are acutely aware of the disadvantages of organizational operation, but they dare not frankly communicate with superiors and tell the truth (Wu et al. 2012). When employees are questioned by organizations or leaders, they tend to keep quiet or echo (Zhou and Liao 2012), which is harmful for the development of the organization. Therefore, it is practically significant to explore the influence factors and mechanisms of employee's voice behavior in the Chinese context.

In sum, the following three questions are discussed in this paper: what is the relationship between destructive leadership and employees' voice behavior? How does destructive leadership influence employees' voice behavior? Does the relationship between destructive leadership and employees' voice behavior depend on employees' personal values? The basic hypotheses of this paper are that destructive leadership negatively impacts employees' voice behavior by negatively impacting the perceived organizational cohesion, and employees' conformity value enhances the relationship between destructive leadership and perceived organizational cohesion.

14.2 Diversity of Perspectives

How does leadership behavior affect employees' voice behavior? Two categories of mediator variables have been researched in the existing literature: one category deals with the psychological variables about an individual, such as organization-based self-esteem (Yan and Huang 2012) and psychological safety (Wu et al. 2012), and the other deals with psychological variables about the relationship between an organization and the individual, such as the psychological ownership of an organization (Zhou and Long 2012) and perceived organizational support (Li et al. 2009b). In this paper, the mechanism of leadership behavior that affects an employee's voice behavior is argued from the perspective of the perceived organizational cohesion, which will extend theoretical research about an employee's voice behavior. In addition to the angles of the individual and the relationship between the organization and the individual, the angles of the perceived organizational environment are added, which will contribute to a more comprehensive understanding of the mechanism of leadership behavior that affects an employee's voice behavior.

The relationship between leadership behavior and an employee's voice behavior is also influenced by the employee's own values, such as uncertainty avoidance (Wu et al. 2012), tradition (Zhou and Long 2012), and locus of control (Yan and Huang 2012). Therefore, studying the influence of conformity value helps to understand the relationship between leadership behavior and employees' voice behavior in a Chinese cultural context.

14.3 Conceptual Overview

The study of destructive leadership stems from the research on charismatic leadership by House and Howell (1992), who argued that personalized charismatic leaders tend to have hubris and are more likely to perform destructive behaviors or other aggressive behaviors toward their subordinates. There are many names for destructive leadership, such as abusive supervision, abusive leadership, petty tyranny, toxic leadership, leader bullying, derailed leadership, etc. Although these names vary, their meanings are similar. We refer to these terms as destructive leadership. Tepper (2000) referred to destructive leadership as "subordinates' perceptions of the extent to which supervisors engage in the sustained display of hostile verbal and nonverbal behaviors, excluding physical contact," such as publicly criticizing or mocking subordinates, being rude to subordinates, failing to perform commitment to subordinates, being indifferent to subordinates, and shaming or abusing subordinates. Einarsen et al. (2007) proposed that destructive behavior should be accounted for from both subordinates and organization. They defined destructive behavior as

“the systematic and repeated behavior by a leader, supervisor or manager that violates the legitimate interest of the organization by undermining and/or sabotaging the organization’s goals, tasks, resources, and effectiveness and/or the motivation, well-being or job satisfaction of subordinates.” In the Chinese context, destructive leadership includes four dimensions: corruption, excoriation of subordinates, abuse of subordinates, and the loss of professional morality (Lu et al. 2012). We will employ the definition of destructive leadership put forward by Tepper (2000) because we mainly focus on the impact on subordinates.

The concept of the voice was first put forward by Hirschman (1970), who argued that voice behavior was the response of employees or customers when they express their dissatisfaction with the organization (Duan and Zhang 2010). Duan and Lin (2011) proposed that employees’ voice behavior can be divided into the overall situation voice and self-aggressive voice from altruism and selfishness in the Chinese context. Liang and Farh (2008) put forward a two-dimensional model of the voice, which includes the promotive voice and the prohibitive voice. The former emphasizes expressing innovative ideas to increase the efficiency of the organization, and the latter emphasizes expressing preventative advice on problems hindering the development of the organization, such as improper business processes. These two categories of voice are both included in this paper. We refer to voice behavior as employees actively put forward opinions to improve the present organizational situation (Dyne et al. 2003).

In 1950, Festinger, et al. formally defined *cohesion*, which marks the beginning of the study of cohesion (Li and Zhang 2009). Festinger argued that cohesion was the field of the sum of acting forces keeping members in the group (Li and Zhang 2009). Tziner (1982) divided cohesion into interpersonal cohesion based on social emotion and task cohesion based on the task objective. Bollen and Hoyle (1990) referred to group cohesion as one’s sense of belonging to a certain particular group or the sharing feeling between one member and other members in the group. Other scholars also regarded emotion as an important content of cohesion (Siebold 1999; Zaccaro and McCoy 2006). Li et al. (2009a) defined organizational cohesion as “a kind of state of pulling together and keeping one in the process of achieving goals, including six dimensions, that are the staff centripetal force, cohesion to leaders, task coordination, interpersonal harmony, benefit sharing and value identification, which were reflected from individuals, groups and organization.” The comprehensive definition is employed in this paper.

The conformity was one of ten individual values proposed by Schwartz (2006), who defined conformity as “the restraint of actions, inclinations and impulses likely to upset or harm others and violate social expectations or norms.”

Other relevant studies have shown that destructive leadership affects the physical and mental health and well-being of employees (Nyberg et al. 2011; Schyns and Schilling 2012; Tepper 2000), making subordinates dissatisfied with organizations, reducing the organizational commitment of subordinates, and thus increasing the employee turnover rate (Gao and Sun 2009; Hong and Wang 2012; Yan and Huang 2012). Destructive leadership easily arouses employees’ negative emotions, and negative emotions could suppress employees’ voice behavior (Fu et al. 2012),

making employees become silent (Duan 2012). Destructive leadership also affects employees' work attitude (Hong and Wang 2012; Wang et al. 2012), reduces employees' job satisfaction (Reed and Bullis 2009), and increases employees' counterproductive behaviors and deviation behaviors (Gao and Sun 2009; Ma and Sun 2009), thereby affecting individual performance and organizational effectiveness (Robinson et al. 2009; Schyns and Schilling 2012). Aryee et al. (2007) and Yan (2012a) argued that destructive leadership decreases the organizational citizenship behavior of subordinates. Employees will retaliate against supervisors when they hold strong faith in "tit-for-tat." Thus, destructive leadership negatively impacts employees' psychology, attitude, and behaviors.

Although employees' voice is a behavior directed toward organizations, it can be finished only by relying on superiors. This behavior compels employees to share their ideas with superiors and to hope to obtain certain formal or informal rewards, such as being recognized by superiors. Based on the social exchange theory, voice behavior can be seen as an exchange process between employees and superiors. When superiors display positive leadership behaviors, such as understanding and respecting subordinates, treating others equally, being good listeners, etc., employees will increase voice behaviors in return. However, when superiors display destructive behaviors, such as fleeing subordinates, belittling subordinates, and disregarding and excluding subordinates, employees will negatively respond to the destructive behaviors of the supervisors, such as reducing voice behaviors. Therefore, we hypothesize the following:

H1: Destructive leadership is negatively related to employees' voice behavior.

The existing research has shown that leaders influence the formation and development of organizational cohesion, and leaders' quality and behaviors have a large impact on organizational cohesion (Chase et al. 1997; Li et al. 2009b; Liu et al. 2006). Democratic leadership is helpful in enhancing organizational cohesion (Nascimento Junior and Vieira 2013), and authoritarian leadership will weaken organizational cohesion (Chen et al. 2012). The empirical research by Tepper et al. (2008) and Gao (2009) showed that destructive leadership influences employees' emotional commitment to the organization. The emotional factor, keeping members within the organization, is an important dimension of organizational cohesion. Therefore, destructive leadership behavior weakens organizational cohesion.

In view of the multiple levels of organizational cohesion, first, at the individual level, organizational cohesion includes the staff's centripetal force and cohesion to leaders. The cohesion to leaders refers to the extent to which employees identify leaders and actively follow leaders (Li et al. 2009b). Destructive leadership makes employees dissatisfied with leaders, reduces employees' identification and will to follow leaders, and weakens organizational cohesion. Second, at the group level, organizational cohesion includes interpersonal harmony and task collaboration (Li et al. 2009b). Destructive leadership affects employees' physical and mental health (Nyberg et al. 2011; Schyns and Schilling 2012; Tepper 2000) and arouses employees' negative emotions, and emotional intelligence influences perceived organizational cohesion (Liu et al. 2011). Destructive leadership also affects

employees' work attitude (Hong and Wang 2012; Wang et al. 2012) and reduces employees' team spirit, weakening organizational cohesion. Third, at the organizational level, organizational cohesion includes value identification and benefit sharing (Li et al. 2009b). Destructive leadership makes employees dissatisfied with organizations (Gao and Sun 2009), which reduces employees' identification with the organization's goals and values, weakening organizational cohesion.

Employees will conduct more active and more frequent social exchange behaviors when they perceive stronger organizational cohesion (Magni et al. 2009; Liu et al. 2006). Voice is a behavior directed toward the organization as an exchange between employees and organizations. The proxy-system theory (Masterson et al. 2000) argues that leaders are the agents of the organization. Therefore, employees will regard leaders' attitude and behaviors as organizational attitude and behaviors. Destructive leadership behavior has a negative influence on employees, not only changing employees' attitude and behaviors to leaders but also changing employees' attitudes and behaviors toward the organization. Destructive leadership weakens perceived organizational cohesion and thus reduces the benign exchanges between employees and organizations, to reduce employees' voice behavior, that is to say, the negative impact of destructive leadership on employees' voice behavior is mediated by perceived organizational cohesion.

Based on the above literature and analysis, we hypothesize the following:

- H2: Destructive leadership is negatively related to perceived organizational cohesion.
- H3: Perceived organizational cohesion mediates the relationship between destructive leadership and employee's voice behavior.

Employees' behaviors will be affected by their values when they deal with the relationship with leaders and organizations. Conformity is one of these underlying values. Conformity emphasizes self-restraint in everyday interaction with others, such as obedience, self-discipline, politeness, honoring parents and elders, loyalty, responsibility, etc. Employees with higher conformity value tend to more strongly identify system-proxy patterns and equate leaders with the organizations. Employees with lower conformity value tend to simply regard leaders as part of the organization. Therefore, leaders' behaviors have a greater influence on employees with higher conformity value. In this paper, we infer that leaders' behaviors have a greater influence on the perceived organizational cohesion by employees with higher conformity values. That is, the influence of destructive leadership on perceived organizational cohesion is more significant when employees' conformity value is higher.

Based on the above analysis, we hypothesize the following:

- H4: The conformity enhances the relationship between destructive leadership and perceived organizational cohesion. Specifically, the negative relationship between destructive leadership and perceived organizational cohesion is stronger when employees' conformity value is higher.

The theoretical model is shown in Fig. 14.1.

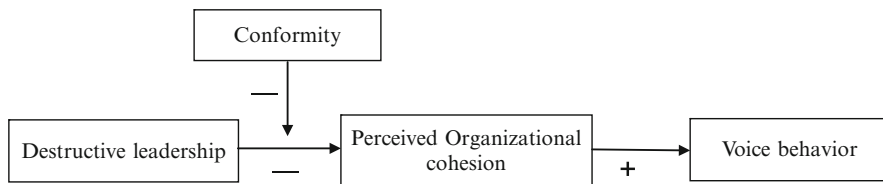


Fig. 14.1 The theoretical model

14.4 Why It Concerns Management

Leaders are delegates of an organization, and usually only when relying on leaders do employees make suggestions to the organization; therefore, leaders' behavior is an important influence factor of employee's voice behavior (Bao and Qian 2009; Qian and Bao 2010). Transformational leadership, authentic leadership, and authorization can promote employees' voice behavior (Ge et al. 2012; Hsiung 2012; Janssen and Gao 2013; Raub and Robert 2012). Detert and Burris (2007) found that transformational leadership and managerial openness were significantly and positively related to voice behavior. Liang and Tang (2009) found that transformational leadership can promote employees' voice behavior in their empirical research. Zhou and Long (2012) found that transformational leadership had a positive impact on employees' voice to leaders and colleagues by employing a paired sample of 373 superiors and subordinates.

Leadership behavior is not only positive and constructive but also negative and destructive. There are few studies about the latter in the existing literature. In practice, leaders' destructive behaviors are far more prevalent than their constructive behaviors, and the forms of destructive behaviors are varied (Aasland et al. 2009), damaging the interests of both employees and organizations (Sun and Ling 2010). Therefore, it is important to discuss the influence of leadership behavior on employees from the point of view of negative leadership (Li et al. 2009b).

Destructive leadership can produce many types of negative influence. For example, destructive leadership affects the relationship between supervisors and subordinates and subordinates' trust in supervisors (Li et al. 2010a, b), and organizational trust positively impacts employees' voice behavior (Ng and Feldman 2013). Destructive leadership negatively impacts emotional commitment, task performance, and contextual performance (Gao 2009; Yan and Pei 2013). Destructive leadership has a significant influence on both organizational deviance (damaging organizational equipment, deliberately slowing work progress, telling lies about their working hours, stealing supplies, etc.) and interpersonal deviance (insulting colleagues, injuring colleagues, spreading rumors about colleagues, etc.). Destructive leadership affects the physical and mental health and well-being of employees (Nyberg et al. 2011; Schyns and Schilling 2012; Tepper 2000), making subordinates dissatisfied with organizations, reducing the organizational commitment of subordinates, and thus increasing the employee turnover rate (Gao and Sun 2009; Hong and

Wang 2012; Yan and Huang 2012). Destructive leadership easily arouses employees' negative emotions, and negative emotions could suppress employees' voice behavior (Fu et al. 2012), making employees become silent (Duan 2012). Destructive leadership also affects employees' work attitude (Hong and Wang 2012; Wang et al. 2012), reduces employees' job satisfaction (Reed and Bullis 2009), and increases employees' counterproductive behaviors and deviation behaviors (Gao and Sun 2009; Ma and Sun 2009), thereby affecting individual performance and organizational effectiveness (Robinson et al. 2009; Schyns and Schilling 2012).

An employee's behavior is influenced by his/her own personality and the perceived environment (Lewin 1936). Perceived organizational cohesion is an important organizational environment variable. Organizational cohesion affects organizational productivity (Duan et al. 2009). The team cohesion is positively related to the team performance (Daspit et al. 2013; Evans and Dion 2012; Zeng 2010) and to the team creativity (Li et al. 2012). In this chapter, the mechanism of leadership behavior that affects an employee's voice behavior is argued from the perspective of the perceived organizational cohesion, which will extend theoretical research about an employee's voice behavior and will contribute to a more comprehensive understanding of the mechanism of leadership behavior that affects an employee's voice behavior.

As we know, Chinese people have formed the characteristic of rolling with the punches and they have little resistance to superiors because they have been influenced by centralized rule for a long time. In other words, China is a typical high-conformity country (Schwartz 2006). Generally, employees' conformity value is higher in China. Therefore, studying the influence of conformity value helps to understand the relationship between leadership behavior and employees' voice behavior in a Chinese cultural context.

14.5 Key Insights from Research

The questionnaires, which were collected for a short-term training class in batches, were delivered and completed on the spot. We collected 290 questionnaires in total, and 259 valid questionnaires were ultimately included in this study, and the valid rate was 89.300 %. The participants were drawn from several industries, including banking, electronics, real estate, and so on. Among our sample, employees account for 63.7 % of the sample, middle managers account for 28.2 %, top managers account for 3.9 %, and others are not represented. Participants from state-owned enterprises account for 56.400 %, participants from private enterprises account for 26.600 %, participants from foreign-owned enterprises account for 6.900 %, and others are not represented. Females account for 49.800 %. Participants with a high school diploma and below account for 2.000 %, participants with some college education account for 15.800 %, participants with a bachelor's degree account for 64.100 %, participants with a graduate degree account for 15.800 %, and others are not represented. In the sample, 63.700 % are married. The average age of participants is 32.71 ($SD=7.092$), and the average organizational tenure is 6.859 years ($SD=6.944$).

A six-item scale by LePine and Van Dyne (1998) measured employees' voice behavior. A sample item is: "speaks up actively ideas for new projects or changes in procedures."

Destructive leadership was measured through a six-item scale by Tepper (2000). A sample item is: "belittle me or talk down to me."

Perceived organizational cohesion was measured through a scale adapted from Li and Zhang (2010). The original scale includes eighteen items, which represent six dimensions. To simplify, we chose six items with the highest loading in their own dimensions. They were as follows: (1) I am proud of being a member of the company; (2) I very much identify with the leaders; (3) generally, team coordination at work is good; (4) everyone likes to take part in the social activities among colleagues, such as dinner parties or sports; (5) there is a close link between the interests of employees and that of the company; and (6) employees work hard for a shared goal.

Conformity was measured through a four-item scale by Schwartz (1994). A sample item is: "it is very important for me to be polite to others, and I try my best not to bother or displease others."

All of the scales were six-point Likert-type scales, and all of the Cronbach's alpha scores were greater than 0.700.

Prior research has noted that demographic variables such as gender, age, tenure, and the degree of education may influence employees' voice behavior (Duan and Zhang 2010). Therefore, we controlled the demographic variables to examine the net effect of the independent variable on the dependent variable.

We used SPSS22.0 and LISREL8.7 to analyze the data. First, we assessed the discriminant validity of the key variables through a confirmatory factor analysis (CFA) and examined the common method variance. Then, a structural equation model (SEM) was used to test the influence of destructive leadership on voice behavior and the mediation effect of perceived organizational cohesion by comparing different models. Finally, we employed the structural equation model to examine the moderation effect of conformity on the relationship between destructive leadership and perceived organizational cohesion. When examining the moderation effect, we first adopted the latent interaction model without the mean structure to construct the latent variable of the moderation effect (Wu et al. 2009, 2011). The packed items of destructive leadership and conformity were centralized, and they were multiplied in pairs according to the principle of "the high with the high and the low with the low" of factor loadings. Because the conformity variable included four items but the destructive leadership variable included three items after it had been packed, we packed the two items of conformity, of which the factor loadings were lowest, into one. Thus, the latent variable of the moderation effect with three items was constructed, and we then examined the moderation effect of conformity on the relationship between destructive leadership and the perceived organizational cohesion.

We used CFA to examine the discriminant validity of the variables, including destructive leadership, perceived organizational cohesion, voice behavior, and conformity. Because the items were numerous, we packed the data by item parceling. According to Qiu and Lin (2009), the item of which the factor loading was the highest and the item of which the factor loading was the lowest were packed together

and averaged. The item of which the factor loading was the second highest and the item of which the factor loading was the second lowest were packed together and averaged, and so on. The CFA model with four factors was constructed. The results of running LISREL8.7 showed that the model fit well ($\chi^2=156.120$, $df=59$, $\chi^2/df=2.650$, $RMSEA=0.080$, $CFI=0.960$, $NNFI=0.950$), which proved that four variables were very different in their content and measures.

Because the data related to the dependent variable and independent variable were collected in the same questionnaire at the same time, common method variance may be produced. It is necessary to examine the severity of the common method variable. We used exploratory factor analysis (EFA) and CFA to run Harman’s single-factor test. The percent of the first factor’s variance accounting for the total variance is considered in EFA. If it is below 50 %, the common method variance is not serious (Hair et al. 1998). The fit of the single-factor model is compared with that of the theoretical model in CFA. If the common method variance is serious, the fit of the single-factor model is as good as that of the theoretical model. The result showed that the first factor’s variance accounted for 32.407 % in EFA and that the fit of the single-factor model was poor ($\chi^2=1531.830$, $df=65$, $\chi^2/df=23.570$, $RMSEA=0.300$, $CFI=0.480$, $NNFI=0.380$). Compared with the four-factor model, the change of the chi-square was significant ($\Delta\chi^2(6)=1375.710$, $p<0.001$), which showed that the common method variance was not serious and did not substantially influence the relationships among the variables in this study.

The means, standard deviations, and correlation coefficients are reported in Table 14.1. Table 14.1 shows that destructive leadership is negatively related to perceived organizational cohesion ($r=-0.461$, $p<0.01$), providing evidence for H2. The correlation among destructive leadership, perceived organizational cohesion, and voice behavior provides evidence of the mediation effect. Surprisingly, the correlation coefficient between destructive leadership and voice behavior is not significant ($r=-0.070$, $p>0.05$).

We constructed two structural equation models, of which one is the theoretical model and the other is an alternative model. The theoretical model is a full mediation model, which hypothesizes that destructive leadership indirectly influences voice behavior through perceived organizational cohesion. The alternative model is a partial mediation model, which hypothesizes that destructive leadership not only indirectly influences voice behavior through perceived organizational cohesion but also directly influences it.

Table 14.1 Means, standard deviations, correlations, and reliabilities among variables

Variable	Mean	SD	1	2	3	4
1. Destructive leadership	1.782	0.914	(0.861)			
2. Perceived organizational cohesion	4.569	0.899	-0.461**	(0.893)		
3. Voice behavior	3.989	1.254	-0.070	0.290**	(0.924)	
4. Conformity	5.208	0.666	-0.086	0.310**	0.161**	(0.742)

Notes: $N=259$, * $P<0.05$, ** $P<0.01$, *** $P<0.001$; Cronbach’s alpha is presented on the diagonal

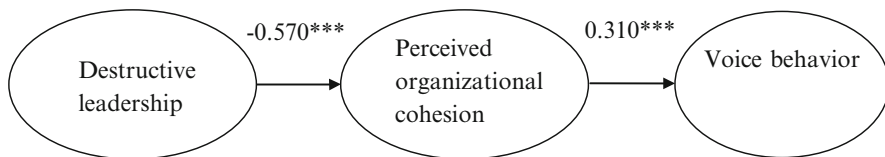
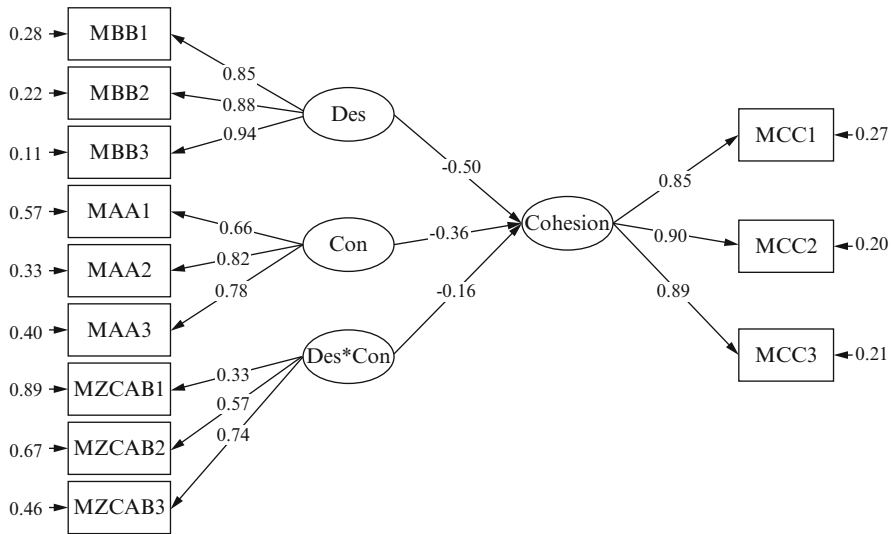


Fig. 14.2 Path analysis of the full mediation model

The result of running LISREL showed that both the theoretical model ($\chi^2 = 83.240$, $df = 25$, $\chi^2/df = 3.330$, $RMSEA = 0.095$, $CFI = 0.970$, $NNFI = 0.950$) and the alternative model ($\chi^2 = 79.620$, $df = 24$, $\chi^2/df = 3.320$, $RMSEA = 0.095$, $CFI = 0.970$, $NNFI = 0.950$) fit the data well. Because these two models were nested models, we examined whether their change of the chi-square was significant according to Anderson and Gerbing (1988). The result showed that when a path from destructive leadership to voice behavior was added to the theoretical model, the change in the chi-square was not significant ($\Delta\chi^2(1) = 3.620$, $p > 0.05$), which revealed that the fit was not improved significantly. Therefore, we rejected the alternative model and chose the theoretical model according to the parsimony principle. That is, the perceived organizational cohesion fully mediates the relationship between destructive leadership and voice behavior. Hypothesis 3 receives support.

The result of running LISREL revealed the standardized path coefficient. As Fig. 14.2 showed, the negative influence of destructive leadership on perceived organizational cohesion is significant ($r = -0.570$, $p < 0.001$), that is, destructive leadership weakens the perceived organizational cohesion. Hypothesis 2 receives support. The total effect of destructive leadership on voice behavior is -0.177 (-0.570×0.310 , $p < 0.001$), showing that destructive leadership is significantly negatively related to voice behavior. That is, destructive leadership restrains an employee's voice behavior. Hypothesis 1 receives support. It is necessary to examine the significance of the mediation effect to further explain the mediation effect of perceived organizational cohesion on the relationship between destructive leadership and voice behavior. The bias-corrected Bootstrap method can provide the exact confidence interval of the mediation effect, can be appropriate for the date of the small sample and non-normal distribution, and has adequate statistical power (Fang et al. 2011). Following Preacher and Hayes (2008), we used SPSS22.0 to examine the mediation effect through the bias-corrected Bootstrap method and randomly selected 1000 samples. The result showed that the mediation of the perceived organizational cohesion was -0.206 and the confidence interval of 95 % (-0.321 , -0.114) did not include zero, further showing that the mediation effect of the perceived organizational cohesion on the relationship between destructive leadership and voice behavior was significant.

Wen and Hou (2003) noted that the structural equation model with the product term is a good model to analyze the latent interaction model. We constructed the moderation model of conformity on the relationship between destructive leadership and voice behavior. In the moderation model, destructive leadership, conformity, and product terms are exogenous latent variables, and perceived organizational



Chi-Square=120.82, df=48, P-value=0.00000, RMSEA=0.077

Fig. 14.3 The moderation effect model of conformity on the relationship between destructive leadership and perceived organizational cohesion (Note: Des stands for destructive leadership, Con stands for conformity, and Des*Con stands for the product term of destructive leadership and conformity)

cohesion is an endogenous latent variable. As Fig. 14.3 shows, the result of running LISREL provides evidence that the fit is good ($\chi^2 = 120.820$, $df = 48$, $\chi^2/df = 2.520$, $RMSEA = 0.077$, $CFI = 0.960$, $NNFI = 0.940$) and that the path coefficient of product term is significant ($r = -0.160$, $p < 0.05$), which shows that conformity significantly moderates the relationship between destructive leadership and employees’ voice behavior is stronger when employees’ conformity value is higher. Hypothesis 4 received support.

We used the method by Dawson and Richter (2006) to diagram the moderation effect (<http://www.jeremydawson.co.uk/slopes.htm>). As Fig. 14.4 shows, when employees’ conformity value is higher, destructive leadership has a greater negative influence on perceived cohesion, and it is easier to weaken the perceived cohesion.

14.6 Illustrative Cases, Examples

In the era of the knowledge economy, the value of employees is embodied in their creative thoughts and ideas. This study shows that destructive leadership reduces employees’ voice behavior. Therefore, measures should be taken to reduce destructive leadership behavior. Managers should actively listen to their employees’ voice and

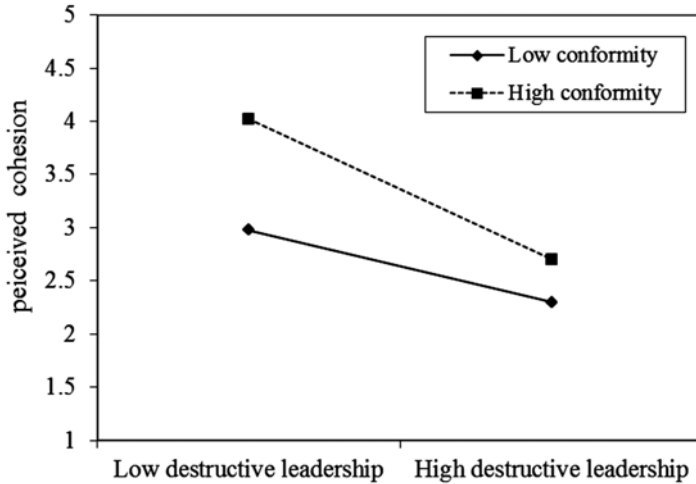


Fig 14.4 The moderation effect figure of conformity on the relationship between destructive leadership and perceived organizational cohesion

give feedback to increase their employees' voice behavior. For organizations, first, organizations should make managers realize destructive leadership's harmful effects and managers should be punished if they do destructive behaviors. This will reduce managers' destructive behaviors and promote employees' voice. Second, employee assistance programs should be implemented to help employees solve personal problems, deepen employees' emotions toward the organization, and identify the interests and goals of the organization and to enhance organizational cohesion, thereby providing an optimal environment for employees to assert their voices. For example, many employees had realized the financial risk before the energy giant Enron Corporation collapsed, but they dared not tell managers. As a result, the problem became more and more serious, creating a snowballing effect and eventually causing the Enron Corporation to go bankrupt. Such occurrences are even more common in China.

Concluding Remarks

Contributions of the present research: destructive leadership and employees' voice behavior have recently constituted emerging research topics throughout the world. Many scholars study the relationship and mechanism between these variables from theory and empiricism. In this paper, we examined the influence and mechanism of destructive leadership on employees' voice behavior in the Chinese context, and the results showed that destructive leadership negatively influenced employees' voice behavior, and the perceived organizational cohesion fully mediated the relationship. Furthermore, conformity moderated the relationship.

The main contributions of this research are the following: first of all, we reveal the mechanism of destructive leadership that influences voice behavior in view of the leadership behavior, perceived organizational environment, and employees' voice behavior. Previous literature of the same type is largely based on the theory of personality, such as organization-based self-esteem (Yan 2012b) and psychological safety (Wu et al. 2012), and the relationship between personality and the organization, such as organizational support (Li et al. 2009b) and psychological ownership of the organization (Zhou and Long 2012). We try to integrate the perceived organizational environment into the literature. We believe that this perspective provides a new view with which we understand the mechanism of voice behavior.

The other contribution is that we determined the moderation effect of conformity. Employees with higher conformity value are more sensitive to leaders' behaviors and more likely to equate leaders' behaviors with organizational behaviors because they identify the system-proxy pattern between leaders and organizations. Therefore, the negative relationship between destructive leadership and employees' voice behavior is stronger when employees' conformity value is higher.

Limitations and future research directions: first, the data for the independent variable and dependent variable were collected from the same participants, so it was inevitable that the relationship between these variables was influenced by common method variance, although the test results showed that the common method variance was not serious. Second, this study is a cross-sectional study, and the date of the independent variable and dependent variable was collected at the same time. However, the influence of destructive leadership on voice behavior through perceived organizational cohesion must be influenced by time. If the data are collected at different times, the relationship among them will be clearer. The follow-up study should be used in future research, and the data for the independent variable and dependent variable should be respectively collected at different times; thus, the influence of time on the relationship between the independent variable and dependent variable should be examined.

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