

**Telecommunications Business Venturing in China:
Identification of Investment Orientations Using Deal Reporting**

by

Tony Whey Yit Lim

**B.Sc., Electrical Engineering
University of Illinois at Urbana-Champaign, 2003**

Submitted to the Engineering Systems Division
in Partial Fulfillment of the Requirements for the Degree of

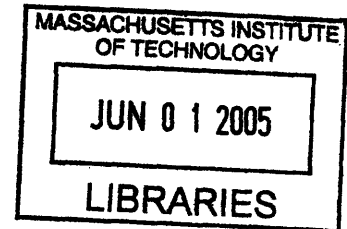
Master of Science in Technology and Policy

at the

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

June 2005

©2005 Massachusetts Institute of Technology.
All rights reserved.



Signature of Author.....
Technology and Policy Program, Engineering Systems Division
May 4, 2005

Certified by.....
James E. Short
Visiting Associate Professor and Research Scientist
MIT Center for E-Business
Thesis Supervisor

Accepted by.....
Dava J. Newman
Professor of Aeronautics and Astronautics and Engineering Systems
Director, Technology and Policy Program

DEWEY



**Telecommunications Business Venturing in China:
Identification of Investment Orientations Using Deal Reporting**

by
Tony Whey Yit Lim

Submitted to the Engineering Systems Division
on May 4, 2005 in Partial Fulfillment of the Requirements for
the Degree of Master of Science in Technology and Policy

Abstract

China's recent entry into the World Trade Organization (WTO) in December 2001 has lent speed to an ongoing series of market reforms that has opened up the massive Chinese domestic market to the world. The thought of China selling its products and services freely in global markets in exchange for opening up its own growing domestic market of 1.2 billion people is staggering and demands for business and policy decision makers to have an understanding of China's unique investment landscape.

Centering on technology venturing in the telecommunications sector in mainland China, this research identifies and analyzes patterns of deal-making and strategies that motivate business investments in the technology space in mainland China. Three investment orientations – cost-minimization, domestic market-driven and joint development - are proposed and verified using the research data. Data was collected on all publicly-reported deals in China, published in business reporting services in the English language including the *China Business Review*, *Reuters*, *Investext*, *Dow Jones*, and *The Economist Intelligence Unit*. Objective data on deal attributes was matched with subjective and evaluative data on strategies and expected deal significance. By performing content analysis and statistical analysis on the data collected, results were obtained regarding the investment orientations in mainland China of two companies, UTStarcom Inc. and Nortel Networks Corp.

It was found that significant differences existed in the objective and subjective attributes of telecommunications business ventures in China. The two companies that were studied exhibited all proposed investment orientations, including the third joint development orientation that is emerging and directing investments into Sino-foreign partnership opportunities that jointly developed 3G products for the international market. There is a decreasing trend in number of Sino-foreign import contracts and an increasing trend in Sino-foreign exports in telecoms. These results point to the emergence of Chinese telecom companies that compete strongly in the Chinese marketplace and in international markets. Three deal drivers are identified from the deals that were studied, along with several possible risk-bearing changes that might result from policy influences in China. Difficulties in tracking deals are described and the implications of the research findings from a business and policy perspective are discussed.

Thesis Supervisor: James E Short

Title: Visiting Associate Professor and Research Scientist, MIT Center for E-Business

Table of Contents

Telecommunications Business Venturing in China:.....	1
Table of Contents	5
Table of Figures	7
Acknowledgements.....	9
CHAPTER 1: Technology Venturing in China	11
1.1 China cannot be ignored	11
1.2 Focus of study.....	11
1.3 The Chinese investment landscape	12
1.4 Synopsis	14
CHAPTER 2: Market Strategies and Investment Orientations.....	15
2.1 Hypotheses	15
2.1.1 Deal attributes	15
2.1.2 Investment orientations	15
2.2 Using Deals.....	17
2.3 Literature Review.....	18
2.4 Summary	21
CHAPTER 3: Lay of the Land.....	23
3.1 Overview of Chinese telecommunications industry	23
3.2 The stakeholders	24
3.2.1 The State	24
3.2.2 Incumbent operators.....	25
3.2.3 Domestic entrants.....	27
3.2.4 Foreign strategic investors	28
3.2.5 Domestic champions.....	28
3.3 Regulatory landscape	29
3.2.1 Equipment vs. services.....	30
3.2.2 Progress made	31
3.2.3 Fragmented and uncertain.....	32
3.2.4 Gradual change	32
3.4 Summary	33
CHAPTER 4: Methodology.....	35
4.1 Finding and Collecting Data	35
4.1.1 The Deals Database.....	35
4.1.2 The Disclosure Database.....	37
4.2 Describing the Data.....	38
4.3 Selecting Companies and Integrating Databases	40
4.4 Content Analysis.....	42
4.5 Summary	45
CHAPTER 5: Findings	47
5.1 General findings from the deals database	47
5.1.1 Deal occurrence	47
5.1.2 Top companies	50
5.1.3 Export deals	51

5.1.4 Reported deal values	51
5.2 Specific findings from the deal-centric dataset.....	52
5.2.1 Deal coverage.....	52
5.2.2 Geographical distribution.....	52
5.3 Findings from content analysis	54
5.3.1 General descriptive statistics.....	54
5.3.2 Comparison across companies.....	55
5.3.3 Comparison across time.....	55
5.3.4 Comparison across product line.....	56
5.3.5 Comparison across individual deals.....	57
5.4 Summary.....	62
CHAPTER 6: Discussion.....	65
6.1 Aspects of investment deals.....	65
6.1.1 Deal reporting	65
6.1.2 Deal flow.....	66
6.1.3 Deal drivers.....	66
6.1.4 Deal scope, pattern and strategy	68
6.1.5 Hypotheses revisited	70
6.2 Investment orientations.....	70
6.3 Institutional and policy influences	73
6.4 Summary.....	78
CHAPTER 7: Critique, Future Research and Conclusions	81
7.1 Critique	81
7.2 Future Research	82
7.3 Conclusions.....	82
APPENDICES	85
Appendix A: Telecoms Sector Restructuring in China.....	85
Appendix B: The General Inquirer	87
B1: Overview	87
B2: Sample article I	90
B3: Sample article II	91
Appendix C: Compiled UTStarcom and Nortel business deals.....	93
Bibliography	97

Table of Figures

Figures

Figure 2.1: Unit labor costs (in US\$) with projections until 2003.....	16
Figure 4.1: Screen shot of deal-centric database	41
Figure 4.2: Conceptual flow of content analysis.....	43
Figure 5.1: Total Sino-foreign telecom ventures, both import and export, in China	48
Figure 5.2: China's Sino-foreign import contracts in telecommunications	48
Figure 5.3: Sino-foreign joint ventures and MOUs in telecommunication	49
Figure 5.4: China's Sino-foreign exports in telecommunications	49
Figure 5.5: Scatter plot of reported deal value (in US\$ millions) across time period	51
Figure 5.6: Geographical distribution of UTStarcom and Nortel deals (2002-2004)	53

Tables

Table 2.1: Example of different types of business deals studied	18
Table 3.1: Subscriber growth in China for period 2000-2004	23
Table 3.2: Summary of the scope of service for the 6 telecom service providers in China	25
Table 4.1: Codified attributes of business deals in the deals database	39
Table 4.2: Top 5 foreign companies based on number of deals	40
Table 4.3: Summary of the integrated deal-centric database	42
Table 4.4: Summary of four GI dictionary supplied categories	44
Table 5.1: Top 5 foreign companies based on number of deals from 2002 to 2004	50
Table 5.2: Top 5 domestic companies based on number of deals from 2002 to 2004.....	50
Table 5.3: Summary of coverage by publications for UTStarcom and Nortel deals (2002 to 2004)	52
Table 5.4: Descriptive statistics of 5 General Inquirer content categories.....	54
Table 5.5: Results of analysis of variance (ANOVA) across companies on GI categories, at 5% level of significance.....	55
Table 5.6: ANOVA table for comparison across 12 time quarters, at 5% level of significance.....	55
Table 5.7: ANOVA table for UTStarcom scores for product lines, organized by company, at 5% level of significance	56
Table 5.8: ANOVA table for Nortel scores for product lines at 5% level of significance Table 4-8:.....	56

Table 5.9: Top 3 UTStarcom and Nortel product lines based on Positiv means .	56
Table 5.10: ANOVA table for comparison across individual deals, at 5% level of significance.....	57
Table 5.11: Top 3 UTStarcom deals ranked by coverage	58
Table 5.12: Top 3 UTStarcom deals ranked by positive outlook.....	59
Table 5.13: Top 3 Nortel deals ranked by coverage	60
Table 5.14: Top 3 Nortel deals ranked by positive outlook	61

Acknowledgements

First, I would like to thank my parents. I am indebted to them for their tireless love, support and encouragement. Being the first in my immediate family to hold a college degree, let alone a Masters degree, I would not be where I am today were it not for my parents. The determination, diligence and moral values that they have imparted to me have equipped me to grow as a person and to tackle life's challenges head-on during my time in MIT.

Next, I would like to express my gratitude to Professor Jim Short of the MIT Center for E-Business. In his role as a thesis advisor, his valuable advice and generous provision of time and resources have guided me throughout the research study. In addition, I deeply appreciate the times that he has spent sharing his experiences and thoughts, which have contributed to my personal development outside of academic pursuits.

I would also like to thank Garth Jenkins and the team from Nortel Networks for their support and help during the course of the research project. Through my interactions with the team, I have gained many valuable insights and lessons about the telecommunications industry.

Moreover, I wish to recognize the Infocommunications Development Authority of Singapore for their generous provision of a scholarship that has seen me through my undergraduate and graduate education. Without their financial help and the support of the wonderful human resource team, I would not have had the chance to study in the United States. For this, I am deeply grateful.

This section would not be complete without acknowledging my church family here in Boston. I thank Pastors Wayne and Sharon Mitchell, and my mentors Cabin Kim and Will Riddle for their prayers, love and support throughout my time in MIT. Their love for God and the people around them have impacted me greatly.

Of course, my appreciation also goes out to my friends. To my brothers and sisters in Victory Campus Ministries, the Morning Star International Church of Boston and the morning prayer group in MIT, I express heartfelt gratitude for praying and sharing in my highs and lows in MIT. My thanks also go out to my classmates in the MIT Technology & Policy Program including TPPAC for making my time in MIT an awesome learning experience. In addition, I would like to thank Kahshin Leow and my friends in the Singapore Students Society for their kindred spirits and shared memories.

Finally and most importantly, I give thanks to God and His Son, Jesus Christ. Without Him, none of this would matter. He has been my guiding light in my 2 years in MIT, my strength in times of weakness, my joy in times of success. For these things and so much more, I am eternally grateful.

CHAPTER 1: Technology Venturing in China

In 1978, then Chinese Premier Deng Xiaoping began China's "open door policy" and launched mainland China into a new economic era. Today, more than two decades after China first opened its doors to the outside world, the country is experiencing phenomenally high growth rates in its economy. Over the past 10 years, China's gross domestic product has been growing year-on-year at more than 6% annually (The Economist, 2004b). Except for 1999, its fixed investments in the past 10 years have also increased by at least 10% from the previous year.

1.1 China cannot be ignored

China is steadily growing in significance as a political and economic powerhouse. And it cannot be ignored. From political leaders to academics, from business executives to athletes, China is drawing an increasing level of global attention. Headlines about the country are carried on the front pages of leading newspapers. Its flag, with its characteristic yellow hammer and sickle set against a sea of red, has graced the covers of many magazines and journals recently. Senior executives invest large sums of money to develop strategies to conduct business in the huge Chinese market and political leaders make mention of it in a variety of settings. Chinese nationals enroll in growing numbers in universities around the world and products manufactured in China occupy burgeoning levels of company inventories. In addition, in October 2003, China became only the third nation to send a man into space. Beijing is also set to host the next Olympics in 2008. In the upcoming decades, what happens in China promises to impact the rest of the world.

How does one begin to understand China? Home to almost a quarter of the world's population, mainland China is demographically and geographically huge. The birthplace of one of the earliest civilizations, the Middle Kingdom has a rich and vibrant history, complete with glorious imperial eras and tragic periods of suffering. The Chinese culture is steeped in tradition and its language is unique. Politically, the country is one of the only remaining examples of a communist regime. Economically, the Chinese market can be likened to an evolving tapestry that has intertwining threads of state influence, open market reforms, disclosed and undisclosed interests.

1.2 Focus of study

Many books and discourses have been devoted to the various dimensions of the country. This thesis report does not attempt to compress all of China between its covers. Instead, given the scope and practical limitations of a study that has taken one year, the research presented here seeks to concentrate on the investment landscape of the Chinese market by studying foreign investment patterns, which hold business and policy implications.

Centering on technology venturing in the telecommunications sector in China, the goal of the research is to identify and analyze patterns of deal-making and strategies that motivate business investments in the technology space in mainland China. The study seeks to address some of the following questions that we pose of the Chinese technology markets. Are there identifiable patterns of business venturing by foreign companies that exist in the Chinese market? If so, how are such patterns characterized and to what extent have they been influenced by the domestic policies that are in place? As technology transfer takes place in China, how do foreign firms position themselves for the challenges that are posed by emerging Chinese multinational companies? Do foreign companies employ differing investment orientations in their Chinese business deals? Can the study of business investment at an aggregate and individual level offer insight into the technology markets in China? How have the institutions and policies in China shaped or been shaped by the business landscape for domestic and foreign technology firms? As an emerging market, what lessons can China offer to developed and other developing markets?

The results of this research hold important relevance to company executives, private businessmen and women, and policy makers. The responses to the questions posed above are valuable in their potential to lend insight to current investment landscape in mainland China and possible future trajectories of change. Using business deals as a common denominator, the study compares and contrasts the approach of various foreign companies in the Chinese marketplace. In addition, the study presents a lens through which the economic activity in China can be viewed and analyzed.

1.3 The Chinese investment landscape

We are witnesses to an era of change that is unfolding before our very own eyes. With China's recent entry into the World Trade Organization (WTO) in December 2001, the country has committed to introducing several market reforms in the years that follow. The thought of China selling its products and services freely in global markets in exchange for opening up its own growing domestic market of 1.2 billion people is staggering. Chinese market reforms will invariably alter the investment climate in technology markets in China in the coming years, if not decades. Whatever happens, there promises to be interesting and valuable lessons and insights that can be gained.

According to *The Economist* (2004a), during the past three years China has accounted for one-third of global economic growth (measured at purchasing-power parity), twice as much as America. In 2004, China's official GDP growth rate has surged to 9.7%. Even this may underestimate the true rate, which some economists believe was as high as 13%. In 2003, China consumed 40% of the world's output of cement and accounted for 33% of growth in global oil consumption, and 90% of the growth in world steel demand.

The investment landscape in China's technology markets is unique in many ways. First, the rate of change is extremely rapid. Many policies and reforms have been introduced to address issues like protecting intellectual property rights, introducing transparency into

corporate governance, and raising domestic multinational companies. The WTO commitments have fuelled and will continue to propel changes in these markets.

Second, the volume of investments into China sets the country apart from other emerging markets. In 2003, the total value of imports and exports was \$851 billion and the total contracted foreign direct investment in China was \$115.1 billion (National Bureau of Statistics of China, 2004). This trend must cause other developing countries to sit up and take notice because large sums of foreign investments might be redirected into China and away from their developing markets.

Third, the Chinese government has favored cautious and gradual reforms over shock therapy models that have been employed by other planned economies. The evolving investment landscape in China offers a study into such an alternative approach to economic reform. In addition, China has introduced competition into its technology markets without adopting the conventional wisdom of accompanying privatization. What happens in China will determine whether such a model is feasible in the long run.

Lastly, Chinese companies are swiftly gaining visibility internationally. Chinese investments abroad are growing as Chinese domestic companies grow rapidly stronger. In the recent years, the world has watched power brands emerge in China and these domestic champions have begun to step into global markets to compete with more established names. Chinese computer maker Lenovo, which had 2003 revenues of \$3 billion, grabbed world business headlines when it acquired IBM's personal computing division for \$1.25 billion in December 2004. With the review of the deal having been completed by the U.S. Committee on Foreign Investment (CFI), the deal promises to propel Lenovo onto the international stage as the world's third largest PC manufacturer, behind Dell and Hewlett-Packard. TCL Corp., with \$3.4 billion in revenue, has demonstrated its power by inking a deal with France's Thomson to merge their television businesses. TCL also took control of Alcatel's cell-phone business in 2004. Other Chinese power brands include \$10 billion home appliance maker Haier Group, consumer electronics retailer GOME, and telecommunications manufacturer Huawei Technologies.

The entry of Chinese companies into the world's technology markets has significant implications for multiple stakeholders. Developed countries must consider the effects of growing economic and possibly political influence as Chinese investments enter their borders. For example, the U.S. CFI was called upon to review the Lenovo-IBM deal because it was considered an acquisition that affected U.S. national security. In addition, developing countries stand to gain and lose from the emergence of Chinese multinational companies. These companies could offer economic benefits to the developing countries by offering cheaper products and services relative to established global companies. The Chinese domestic champions can also provide useful case studies to developing countries that are interested in modeling such behavior to raise local companies. However, on an international arena, the Chinese multinational companies could challenge multinational companies from developing countries and compete for global investments.

1.4 Synopsis

This chapter established the significance of China and its growing influence in the world. Moreover, the focus of this study was also outlined. In the next chapter, hypotheses for this research study are developed and the theory based on existing literature will be discussed. Chapter 3 will describe the telecommunication market in China, in order to present a lay of the land and to set a backdrop against which this research can be viewed. After that, chapter 4 will elaborate on the methodology that was employed for this study and subsequently, results will be presented in the chapter following that. A discussion of the findings will be conducted in chapter 6 and the hypotheses will be revisited and evaluated. The final chapter will offer a critique and several recommendations before a summary of conclusions will be presented. Appendices are included at the back to provide supplementary information

CHAPTER 2: Market Strategies and Investment Orientations

Having established the importance of China and the value that lies in understanding the investment landscape that exists in China, this chapter will present the hypotheses and theory development for this thesis research. Section 2.1 takes the reader through the process of hypothesis development and describes three hypotheses that are put forth. The next section discusses the use of business deals in the research. Section 2.3 presents a review of the existing literature that pertains to the current research and highlights the ways in which our research contributes to the body of literature.

2.1 Hypotheses

The research is focused on identifying patterns of investments by foreign companies in the Chinese technology markets. We postulate that there are patterns in business ventures in such markets and these reflect the underlying investment orientations and strategies that various foreign companies adopt in China.

2.1.1 Deal attributes

As part of the research, we aim to investigate the occurrence of investment ventures in China. We are interested in identifying deal attributes and differences that may exist along these attributes. We expect that there is a large volume of business deals that take place in the technology markets. In addition, we hypothesize that there exist significant differences across the investment deals along objective deal attributes such as geographical location and along subjective attributes such as expected outcomes.

H1: Significant differences exist between the objective attributes of Sino-foreign business deals that occur in the technology markets in China.

H2: Significant differences exist between the expected outcomes of Sino-foreign business deals that take place in the technology markets in China.

2.1.2 Investment orientations

In the research, we propose three investment orientations that foreign companies adopt in doing business in China today. Investment deals that are motivated by cost minimization goals reflect the first investment orientation. The objective of a company is to increase profits, which can be achieved by increasing revenues or decreasing costs of production. By engaging in business ventures that establish production facilities in a developing country such as China, foreign companies can lower their factors of production significantly. Such factors include issues of cost, capacity, expertise, and quality among others. Subsequently, the products that are manufactured in developing countries can then be exported to home markets and sold for larger profit margins.

In a 1994 survey conducted by the Chung-Hwa Institution for Economic Research (in Fung, Lau et al., 2004, 14), the foreign companies that were surveyed cited abundant labor supply (76.9% of surveyed companies), tax incentive programs (50.1%), market size (36.3%) and low land price or rent (29.4%) as the top 4 reasons for investing in China. Three of these top 4 reasons have to do with decreasing the costs involved with business operations. With her huge national population, China's labor supply is abundant and consequently, relatively much cheaper than labor in developed markets.

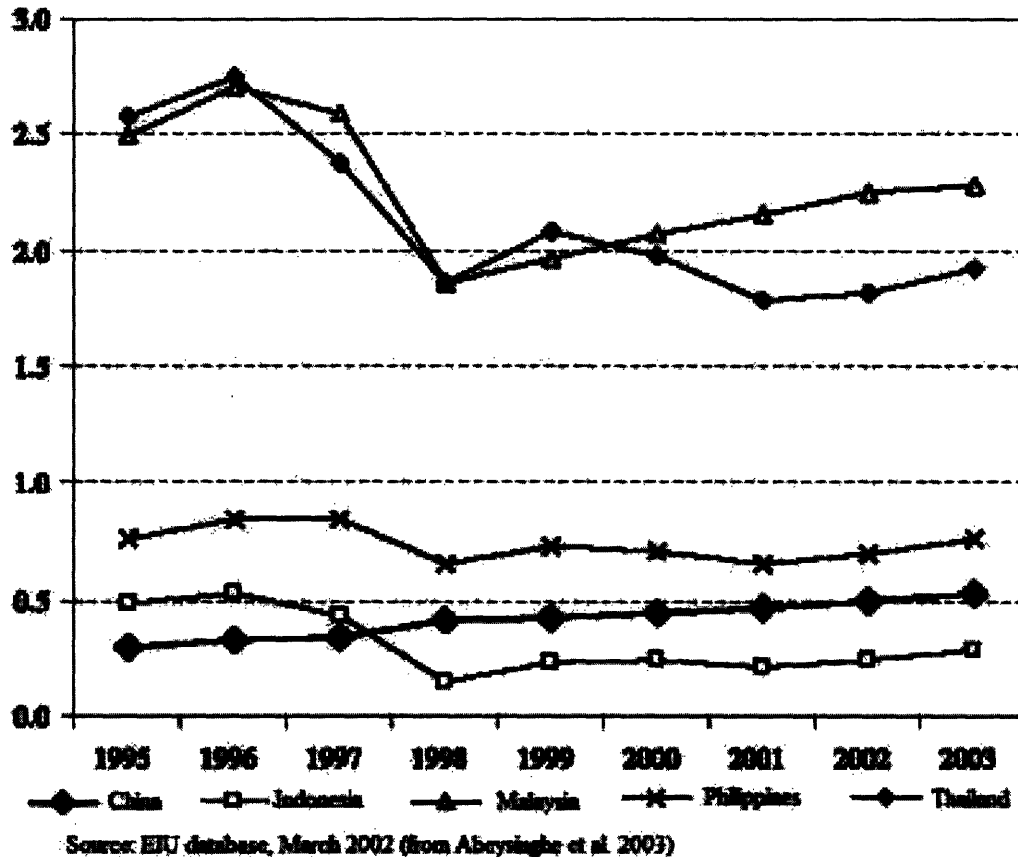


Figure 2.1: Unit labor costs (in US\$) with projections until 2003

With reference to Figure 2.1 above, China's cost of labor can be seen to be much lower than Malaysia and Thailand and relatively comparable with that of Indonesia and Philippines. For similar reasons, land prices and rent in China are comparatively low. In addition, the State government has implemented tax incentives in many regions to promote development. For example, according to Fung, Lau and Lee (2004) within special economic zones, foreign-invested firms are taxed at a 15% rate instead of the general 33% rate. Firms with a contract term of more than ten years pay no taxes for the first two years in which they make a profit. For the subsequent three years, the tax rate is reduced by half to 7.5%. The same rules apply to foreign-invested firms located in open coastal cities and economic and technology districts.

The second orientation is market-driven, where foreign companies conduct business ventures in China in order to gain access to potentially large market. Fung et al. (2004) found that U.S. firms invest in China primarily to establish a beachhead to penetrate the large and rapidly growing Chinese domestic market. In 1995, U.S.-invested firms in China sold 84.5% of their output to customers in China and exported only 8.4% of their outputs back to the United States. The team also found that most U.S. direct investments were concentrated in the provinces of Jiangsu, Shandong, Liaoning, Guangdong and Shanghai, which had the relatively high per-capita incomes, retail sales of consumer goods, and average monthly wage rates. Fung and his colleagues argued that this suggested that the focus of U.S. direct investment is the potential size of the local markets rather than the low levels of the local wage rates.

It can be seen that the first two of the three proposed investment orientations have probably been adopted in the past ten years or more by foreign companies. However, we believe that the third and final orientation is a recent investment position.

The third and final orientation has foreign companies partnering with Chinese companies to jointly develop products for international markets. Here, companies based outside of China enter into partnership with Chinese firms in order to leverage on their expertise so as to jointly stage competitive entry into international markets outside of China. China's gradual opening of her markets to foreign entry has ushered in a high degree of technology transfer to local companies that partnered with foreign companies in joint ventures. Since Sino-foreign joint ventures have been in China for more than 20 years, we expect some domestic companies to have developed expertise and capabilities in the market. With the support and backing of the state government, such companies are able to build innovation on top of the transferred technology to develop competencies that enable them to compete on an international stage. The products of these Chinese companies will not be characterized simply as being cheap and inferior in quality. Instead, the product quality will be considered similar or superior by customers.

Having described the three proposed investment orientations, we predict that foreign companies exhibit one or more of these orientations in their investment deals in China.

H3: Foreign companies exhibit one or more of the three proposed investment orientations in their business in China.

2.2 Using Deals

In order to test these hypotheses, the study will focus on Sino-foreign business deals in the telecommunications industry in China. In the context of this thesis, a business deal is considered to be synonymous with a business venture, where both refer to transactions between two or more companies. These transactions include contracts, joint ventures, partnerships, memorandums of understanding (MoU) and other agreements that occur in the telecommunications industry. In addition, the business ventures that are considered involve at least one Chinese company and another company that is based outside of

China. Alternatively, two or more foreign companies could conduct a business venture together that is based in China. Such Sino-foreign business deals can be import or export deals from the perspective of China. Table 2.1 provides examples of the different types of business deals that are included in the research dataset.

Type of deal	Example
Contract	UTStarcom Inc. of USA signed contract worth \$31mil in Nov'03 with China Netcom for PAS handsets in Liaoning, China
Joint venture	In Feb'04, Siemens Mobile of Germany and Huawei Technologies formed a joint venture in Beijing in a \$100mil agreement to develop, manufacture, and market TD-SCDMA technology in China (Germany:51% stake and China: 49% stake)
Partnership	Beijing International Switching Systems Corp. formed OEM partnership with Alvarion Ltd. of Israel to market its fixed wireless technology in China
Others	Sierra Wireless Inc. of USA licensed Guangdong Isocreate Communications Co. Ltd. in May'02 to distribute its wireless network card in China

Table 2.1: Example of different types of business deals studied

Studying business ventures provides researchers with a lens through which insights into the pattern of investments can be gained. The way that these business deals are studied is how they are covered and referred to in the business press. Different hypotheses have been developed above regarding the characteristics of the business deals. We desire to gauge the degree of importance and significance of various business deals and we postulate that a proxy of measure is the volume and intensity of coverage in various disclosure channels. In addition, we aim to find likely strategic reasons that motivate deal-making and we hypothesize that textual terms of significance and expectations exist in the coverage of business deals across various disclosure channels.

Such terms and information collected through the disclosure channels will enable us to investigate to what extent business deals vary across the various objective and subjective deal attributes. In addition,

2.3 Literature Review

There has been much research in the international market entry literature on possible models for determining foreign direct investment (FDI) and for accounting for firms entering new markets. Various models have been proposed to characterize the strategies

for international market entry. The first of the three that are briefly discussed here is the Transaction Cost Economics (TCE) approach. Developed by Williamson in the late 1970s and early 1980s for the study of economic organizations, the transaction cost approach “regards the transaction as the basic unit of analysis and holds that an understanding of transaction cost economizing is central to the study of organizations.” (Williamson, 1981) Later, this approach was applied by researchers to the area of foreign market entry strategy for firms (Anderson and Gatignon, 1986; Beamish and Banks, 1987; Erramilli and Rao, 1993). This view dictates that cross-border activities take place based on economic motivations to lower costs. The approach emphasizes the importance of firm-specific variable and the cost minimization considerations span the entire value-added chain, ranging from the production to the consumption of goods or services. The TCE approach has been applied to account for how U.S. firms enter and operate in foreign markets (Kogut and Singh, 1988; Agarwal and Ramaswami, 1992; Erramilli and Rao, 1993).

The second approach, termed the “internationalization model”, models foreign market entry as part of an internationalization process of the firm. The model “focuses on the gradual acquisition, integration and use of knowledge about foreign markets and operations, and on the incrementally increasing commitments to foreign markets” (Johanson and Vahlne, 1977, 23). In other words, the internationalization of the firm “is seen as a process in which the enterprise gradually increases its international involvement” (Johanson and Vahlne, 1990, 11). This model supports a gradual and incremental involvement in a foreign market because a firm needs to adapt to the inherent risks in the new market. These risks are borne out of differences in the political, cultural, and market systems that exist across borders.

The third and final approach is called the “eclectic paradigm.” Developed by Dunning (1988), the paradigm seeks to explain the extent, form and pattern of international production, based on their reliance on three sets of factors. These latter factors – ownership-specific factors, location-specific factors, and internalization factors – form the foundation of the paradigm.

Within the context of China, there also exists a body of work on the specific modes of entry. Such studies are important because contextualization offers an opportunity for the further development of international business theory (Toyne and Nigh, 1998; in Child and Tse, 2001). In the context of China, Child and Tse (2001) suggest that state paternalism and complexity in transition economies are two inherent characteristics that can provide insights into such development.

Contextualized studies of China have been conducted regarding how Sino-foreign joint ventures and wholly foreign-owned enterprises (WFOEs) are influenced by changes in government policy on foreign investments and nature of investments (Yan and Warner, 2002). In addition, the impact of order and mode of Chinese market entry on market share and profitability have been studied by Pan, Li and Tse (1999). The modes of entry studied were contractual joint ventures (CJVs), equity joint ventures (EJVs), and WFOEs.

These modes were also studied in the context of a hierarchical model of decision-making by Pan and Tse (2000).

Critiques of existing studies on determinants of FDI have pointed to a number of limitations, including a lack of dynamic and synthesized perspectives (Zhang, Zhang et al., 2004). Such limitations are significant because it has been found that the FDI decisions of multinational companies are not discrete, but should be perceived as a series of decisions that determine the volume and direction of resource flows among different countries (Kogut, 1983; in Zhang, Zhang et al., 2004). This research lends to the body of literature that is deemed lacking by adopting a sequential and synthesized view of FDI.

Despite the wealth of literature on international market entry and modes of entry that pertain to China, we are not aware of a body of literature that studies the occurrence of business deals in emerging markets and uses such deals as a calibrated measure or denominator of comparison of changes in investment. This is interesting since there is research showing that investment announcements and business disclosures have impact and bearing on the financial performance of a firm (Kothari and Short, 2004).

Part of the reason for the absence of considerable research in the area of business deals in emerging market could stem from the difficulties in collecting information about such ventures. Firstly, not all business deals are publicly announced and reported due to the strategic and competitive advantages that firms can reap from the asymmetry of information. Secondly, building a comprehensive database of all publicly disclosed business deals in an industry can be extremely difficult in the absence of a central registry or body that companies are required to report to. Such difficulties can be aggravated by the lack of a corporate governance framework that requires such a practice of reporting or mandates the establishment of such a body of authority. This appears to be the case in China. Thirdly, there is a lack of consensus on what represents a business deal. Various interpretations of the term exist in the negotiation, venture capital, and legal literature. However, we do not know of literature that studies contracts, partnerships, alliances and joint ventures collectively. The definition that we propose in section 2.2 above is not meant to be an authoritative definition of business deals but rather, it serves to be an operative definition on which the research can be built and developed.

Many of the previous studies on China investments have used archive data on an aggregate level released by national authorities (Luo, 1995; Luo and O'Connor, 1998; Luo, 1999; Luo and Park, 2001; Sun, Tong et al., 2002; in Zhang, Zhang et al., 2004). Our research aims to focus attention to a finer level that goes beyond the aggregated figures that are available. This study distinguishes itself in that data regarding business deals is uniquely gathered from analyst reports, trade publications and the large body of archived international business news.

2.4 Summary

In this chapter, we have developed the theory that underpins our study to identify patterns of investments by foreign companies in the Chinese technology markets. A review of the existing literature was discussed. The uniqueness of our research lies in the use of investment deals to study patterns and orientations of investment by foreign companies. In addition, the data resources used to collect information pertaining to business deals is unique in the literature. Three hypotheses were proposed and chapter 4 presents a methodology to test them. However, before that, the chapter that follows will describe the telecommunications industry in China in order to set the context for the reader for the rest of the study.

CHAPTER 3: Lay of the Land

In the preceding chapters, we have posed questions regarding the technology markets in China. Given the practical considerations of research scope, this thesis research is conducted primarily within the context of China's telecommunications industry. As such, there is a need to present the lay of the land in order to paint a backdrop against which the thesis work can be viewed. The first section presents a broad overview of the industry by detailing subscriber levels and teledensity rates on a national and regional scale. Investment levels in the industry will also be described. Following that, section 3.2 will provide a brief description of key stakeholders in the telecommunications equipment and services markets. Section 3.3 will present the regulatory landscape in the telecommunications industry, before a summary is provided in the concluding section.

3.1 Overview of Chinese telecommunications industry

The telecommunications sector has been the most rapidly developing industrial sector in China in the past two decades (Yu, Berg et al., 2004). The sector has been growing in terms of subscriber population and investment levels. Table 3.1 shows the subscriber growth over the past 5 years for fixed-line telephone, mobile telephone, and internet users.

	2000	2001	2002	2003	2004
China's population (millions)	1267	1276	1286	1293	1300
China's GDP per capita (RMB)	7081	7543	7930	9047	10501
Fixed-line telephone					
Subscribers (millions)	144.8	180.4	214.4	263.3	312.4
Teledensity	11%	14%	17%	20%	25%
Mobile Telephone					
Subscribers (millions)	84.5	144.8	206.6	268.7	334.8
Teledensity	7%	11%	16%	21%	26%
Internet					
Users (millions)	22.5	33.7	59.1	79.5	94.0
Teledensity	2%	3%	5%	6%	7%

Table 3.1: Subscriber growth in China for period 2000-2004 (Source: MII, in UTStarcom, 2005)

It is noteworthy that the teledensity rate of China's fixed-line and cellular telephony has increased to 25% and 26%, respectively, in 2004. In the late 1970s when China adopted its open-door policy, telephone penetration rate in China was 0.4% and total number of subscribers was 4.1 million (He, 1997; in Zhang, 2002).

However, the teledensity remains relatively low in comparison to that of developed countries. For example, fixed-line teledensity rates for the United Kingdom (59%),

France (57%), Japan (56%) and the United States (62%) are significantly higher when compared to China (UTStarcom 2005).

Within China, the teledensity rates are not distributed uniformly among the various regions in mainland China. Regional differences raise concerns: according to statistics issued for the first quarter of 2001, western China has only 11.7 phone sets per 100 people, 24% fewer than eastern China. Phone service is available to only 53% of administrative villages in western China, 27% lower than the national average level (Yu, Berg et al., 2004).

A significant level of investment has been directed toward new construction, expansion and reconstruction of fixed assets in the telecommunications sector. In 2003, a total of 111 billion *yuan* was invested into the innovation of telecommunications and other information transmission services. Moreover, 24.3 billion *yuan* was invested into innovation in the manufacture of communication equipment, computers and other electronic equipment. In comparison, investments into innovation were 71.8 billion *yuan* for the production and distribution of electricity, gas and water, 43.2 billion *yuan* for transport, storage and post and 19 billion *yuan* for coking, processing of petroleum and nuclear fuel.

3.2 The stakeholders

There are many different stakeholders with vested interests in the development of telecommunications sector in China. In analyzing the Chinese telecommunications services segment in particular, Mueller and Lovelock (2000) proposed reducing the various contending entities into four distinct groups – the *State*, the *China Telecom group*, a residual category of *domestic competitors* and *foreign strategic investors*. Guan (2003) later adapted and updated their analysis while retaining the framework of the four groups. He renamed second and third players into *incumbent operators* group, and *new and potential domestic market entrants*, which added clarity to the definitions. Here, we analyze the players in the telecommunications services *and* equipment sectors by adapting from the two above publications and employing a similar framework and analysis, but with one more stakeholder group added – *domestic champions*. This section serves to identify and describe the various stakeholders and to outline their interests in the telecoms industry in China.

3.2.1 The State

The “State” refers to the government apparatus at the national level with the State Council serving as its executive and policy-making organ. The State Council is often described as China’s “Cabinet” and is appointed by the Communist Party leadership. From the party’s perspective, the ultimate objective of development is to enhance the state’s power and control (Mueller and Tan, 1997). Based on the State’s conviction that information infrastructure contributes substantially to development, it requires national telecommunication enterprises to roll out infrastructure rapidly so as to cover the entire nation while making as few demands as possible on the national treasury.

The State's interest in growth and efficiency pushes it in the direction of greater openness to foreign strategic investors and a more rapid pace of structural reform. However, several countervailing concerns exist. Firstly, the State wants to maximize the share of domestic firms relative to international firms in strategic markets such as 3G equipment, and it does not want to lose a significant share of the lucrative telecommunications market to foreigners (Tan, 2002). In addition, China's protectionism is also driven by its aim to create and foster "domestic national champions," which are firms that are deliberately cultivated and favored to emerge as the strongest in the market so that it can better advance the nation's aspiration to become a global economic power in strategic, high-tech markets. Moreover, China is an authoritarian, one-party state that routinely relies on restricting information flow to the public. A centralized telecommunications infrastructure that is wholly and directly owned by the State is better suited to its needs for surveillance and censorship.

3.2.2 Incumbent operators

This group of stakeholders refers to the large collection of business and government interests affiliated with the nation's dominant incumbent service providers. The group currently includes incumbents such as the "Big 4" - China Telecom, China Unicom, China Netcom and China Mobile - entities, the Ministry of Information Industry (MII) bureaucracy at the national level and the Provincial Posts and Telecommunications Administrations (PTAs).

Unlike the telecom equipment segment, the services segment had been closed to foreign investment until China's accession into the WTO in 2001. Since then, reforms are underway to open up the market but currently, there is no foreign player in the services segment. At present, there are only 6 exclusively Chinese telecom service providers in China. They are all state-owned and the Chinese government has an indirect control of all of them (Fan, 2005). There are two fixed-line operators with nation-wide licenses, which are China Telecom and China Netcom, two mobile carriers, China Mobile and China Unicom, and two minor players - ChinaSat and China Railcom. Table 3.2 shows a summary of the scope of services for the 6 providers.

Organization	Scope of Service						
	Fixed line			Cellular	Data & Internet Services	Satellite	Paging
	Local	Long Dist	Intl				
China Telecom	√	√	√		√		
China Unicom		√	√	√	√	√	√
China Mobile				√	√		
China Netcom					√		
China Railcom	√	√	√		√	√	
China Satellite						√	

Table 3.2: Summary of the scope of service for the 6 telecom service providers in China (Source: Adapted from Fan (2005) and Pangestu and Mrongowius (2004))

China Telecommunications Group¹ (China Telecom) is the state-owned incumbent local exchange carrier in China. As a result of an industry restructuring to increase competition, the company was split up and it now operates chiefly in 21 provinces in southern China. The company has a registered capital of 158 billion *yuan* (\$19 billion) and 380 billion *yuan* (\$45.8 billion) in asset. It is the second largest operator after China Mobile in terms of revenue (161.2 billion *yuan* in 2004) and profits (28 billion *yuan* or \$3.4 billion). China Telecom owns 70% of fixed infrastructure, including 1 million kilometers of optical cable routes and 200 million-line switching capacity. It is the largest fixed line operator in China and the ninth largest operator in the world.

China United Telecommunications Co., Ltd. (China Unicom) is a state-controlled company that provides paging, long-distance, broadband data, and mobile communications services. It is China's dominant paging company and China's number two mobile phone operator behind China Mobile. The Beijing-based operator offers GSM and CDMA services and had 2004 revenues of 79.3 billion *yuan* (\$9.6 billion) and net profits of 4.4 billion *yuan* (\$528.9 million). Unicom operates 480,000 kilometers of optical cable backbone that covers all major cities and a switching capacity of 130 million lines. China Unicom was established in 1994 by the Chinese government as the first competitor to China Telecom.

China Mobile Communications Corporation is China's leading mobile phone service provider, ahead of China Netcom. Worldwide, it is the largest wireless carrier by subscriber. It was spun off from China Telecom in April 2000 in a move orchestrated by the Chinese government to create a competitive environment in preparation for entry into the World Trade Organization. Its revenue for 2004 was 192.4 billion *yuan* (\$23.3 billion) and net profit was 43.2 billion *yuan* (\$5.2 billion). China Mobile provides GSM and GPRS services in China. Its publicly traded subsidiary, China Mobile (Hong Kong), serves 125 million customers in 21 regions of mainland China, and it has agreed to acquire 10 more additional provincial networks to bring its subscriber count to more than 150 million.

China Netcom Communications (China Netcom) was created in 2002 by the government in an effort to break monopoly by China Telecom in the fixed line service market. Netcom is comprised of three entities: China Telecom's former operations in North China, Jitong Communications, a former data service operator, and the original Netcom, which was a broadband developer and wholesaler. The company's revenue for 2004 was 64.9 billion *yuan* (\$1.1 billion). China Netcom is the third largest operator in China, behind China Telecom and China Mobile.

Nominally, the MII and its provincial branches are administrative and policy-making arms of the government, whereas the Big 4 are collections of separate, state-owned enterprises that provide service at the national, provincial, and local levels. However, due to the current institutional structure and remaining tight links between the MII and the incumbents, the MII still deems all incumbent telecom service providers to be "its

¹ Information for each company is based on company websites, STAT-USA 2004, Hoovers 2005 and ChinaNex 2005.

own enterprises” and therefore, is highly motivated to protect their interests. Driven by its key interests, the incumbent operators group has no economic interest in permitting FDI in telecommunications services. The MII perceives the state-owned incumbent service providers as in competition with, threatened by, and playing catch-up with, the foreign telecommunications operators of the developed world (Guan, 2003).

3.2.3 Domestic entrants

The new and potential domestic market entrants group refers to domestic enterprises that have entered, or want to enter China’s telecommunication services and equipment markets, but are non-dominant.

On the service-side, these players include China Railcom, China Satellite and private investors. China Railways Communications (China Railcom or China Tietong) is the newest member of national operators in China and is lesser known compared to the other providers. Established in 2000 from the telecommunications division of the Ministry of Railways, Railcom operates in all 31 provinces and is allowed to provide all telecommunications services, except mobile services by using its surplus capacity. Revenue for 2004 was 10.7 billion *yuan* (\$1.24 billion) and net profit was 130 million *yuan* (\$15.7 million).

China Satellite Communications Group (ChinaSat) was officially set up in December 2001 by merging China Telecommunications Satellite Corporation, China Oriental Satellite Company, China SpaceCom, and ChinaSat (HK). The company is licensed to engage in all types of satellite related services, including transponder lease, private satellite communications, data broadcasting and domestic TV program transmission. Its revenue for 2003 was 800 million *yuan* (\$96 million). ChinaSat is the smallest of the six telecom service providers but it enjoys stable income because its major customers are the other five providers, television and radio broadcasting service providers and financial institutions.

On the equipment side, members of this group include Datang Telecom Technology Co., Ltd., and China Putian Corp. These companies are large but do not yet have the strength and dominance that is necessary for them to compete on the global stage. These companies are growing significantly, with both heavily involved in 3G initiatives in China that can boost profits and spur innovation for both firms. It is possible and arguably probable that in the next few years, these companies could well become members of the domestic champions group.

Compared to the major incumbents, the stakeholders in this group have less bargaining power for capital resources from the State. Therefore, the service providers are more willing to sell equity stakes to foreign investors, or to offer foreigners management or operational control in exchange for capital or access to technology. Similarly, the equipment vendors in this group are eager to form alliance and forged partnerships with foreign multinationals for the same purposes. This group also has vested interests in supporting market reforms based on WTO commitments because the reforms provide them with a more favorable environment for competition. However, they also have an

interest in protection from unrestricted foreign competition on FDI that could erode their profit potential in the Chinese domestic market.

3.2.4 Foreign strategic investors

This group refers to foreign telecommunications equipment and service firms and entrepreneurs who wish to invest and make profits from the telecom markets in China. From a services perspective, such investors want to participate in the management, operation and ownership of telecommunications service enterprises in China. From the equipment vendor's perspective, such investors desire to grow their market share and profit margins in the Chinese market by making important and strategic investments in high-growth areas that are important to the State government. There is a key difference between the two subgroups, which lies in the fact that the equipment segment is very open to foreign participation while the services segment has remained relatively closed. Consequently, the main concern for a foreign service firm is how to enter the Chinese market, whereas the concern for a foreign equipment companies is how to expand in the Chinese market.

Foreign equipment companies in this group would include infrastructure equipment vendors such as LM Ericsson, Nortel Networks Corp., Cisco Systems Inc., Lucent Technologies Inc., Alcatel, Siemens AG, UTStarcom Inc., Fujitsu Ltd., NEC Corp., and Juniper Networks Inc. Also included in this group are mobile equipment vendors such as Nokia Corp., Motorola Inc., and Panasonic Mobile Communications Co., Ltd.

Foreign service companies that are in this group would include mobile service operators and fixed-line service operators. The former could include Vodafone Group Plc, NTT DoCoMo, Hutchison Whampoa, T-Mobile International AG, Orange SA, and Virgin Mobile Telecoms Ltd. Fixed-line service operators in this group could include Deutsche Telekom AG, Cable and Wireless plc, SBC Communications Inc., Verizon Communications Inc., and NTT Corp.

All foreign strategic investors have a straightforward interest in maximizing their own profit opportunities and increasing the security and flexibility of the investment climate in China. As a result, they would favor the removal of restrictions on FDI and the promulgation of clear legal and regulatory guidelines in the Chinese telecommunications industry.

3.2.5 Domestic champions

Domestic champions refer to Chinese telecommunication companies that have developed into one of the strongest and biggest in the domestic market such that they are able to leverage on their expertise and competitive advantage to become a market player in the global telecommunications market. None of the telecom service providers in China belong in this group at this point in time, because the closed nature of the service market has prevented much needed technology transfer and foreign investment from taking place. In contrast, the members of this group are all equipment vendors that have significant market share and low-cost production capabilities that allow them to compete and win equipment contracts in international markets.

The domestic champions comprise infrastructure equipment vendors and mobile equipment vendors. Huawei Technologies Co. Ltd. and Zhongxing Telecom (ZTE) Corp. manufacture and develop infrastructure equipment and they have been growing their market share in the global equipment market. Mobile equipment vendors include Ningbo Bird and TCL Communication Technology Holdings.

All of these companies have looked increasingly outside their home market for growth opportunities. They have invested capital and time to develop their export networks by building alliances and establishing joint ventures in foreign developed markets outside of China. They offer low-cost product offerings in developing markets in order to win contracts and market share at the expense of their competitors. These champions lead the charge to fulfill the State's aspirations to become a global economic power in the strategic, high-tech market of telecommunications equipment.

The domestic champions have mixed interests in opening the telecommunications equipment and services market in China. Unrestricted foreign competition on FDI could erode their profit potential in the Chinese domestic market and prevent them from maintaining and expanding their position in the domestic markets. However, they have a strong interest in developing partnerships with foreign companies that will enable them to leverage on their partner's expertise and networks in order to enter developed markets.

3.3 Regulatory landscape

The Ministry of Information Industry is currently the principal regulatory agency in China. The MII is subject to oversight by the State Council. The latter body is a cabinet-level group with ultimate decision-making authority on key policy issues in China. Even though the MII is tasked with regulating the sector and defining telecommunications policy, the State Council is the body that ultimately approves policy. It also has the power to determine which operators, technologies and infrastructure exist in China's telecoms market.

The State Council approves large-scale projects submitted to it by the MII ministries and provincial governments. It also formulates laws and issues directives regarding macro-level policy decisions, such as the direction of telecommunications development under China's five-year plan. It is only at the State Council level that all lines of authority in China come together. Hence, the State Council is responsible for resolving policy disputes. (Pyramid Research, 1999)

The MII is the only ministry responsible for the country's telecoms sector. Given that telecommunications is one of China's pillar industries and a key focus of the economy, the MII has been provided with substantial power and clout. The ministry is responsible for implementing many of the decisions that are made at the higher level of the State Council, and is technically subservient to the Council. It also sets plans and targets for the country's telecoms infrastructure development. In addition, it has the authority to

determine the technology and equipment standards that will be adopted in China, as well as licensing procedures for both the telecoms service and equipment markets. Although the MII wields extensive influence, its power is limited by the State Council's ability to override the MII's decisions. The State Council has overall authority on all decisions related to the telecoms sector and has the power to appoint or dismiss the head of the MII.

The MII's control over operators in China's telecommunications sector has been practically absolute (Pyramid Research, 1999). As the dominant operator of a command economy, China Telecom's annual and five-year plan targets completely mirror the nation's telecoms development goals. Not only does the MII determine China Telecom's targets, but it also influences the carrier's strategy and technology adoption, as well as equipment purchasing decisions. China Telecom officials buy equipment using MII's "buy local where possible" mantra as a general rule, in order to gain favor with central authorities in China.

Other bodies that play smaller roles in the shaping of regulations and policies that pertain to telecommunications are the State Council Informatization Office (SCITO), National Development and Reform Commission (NDRC), the Ministry of Science and Technology (MOST) and the Ministry of Commerce (MOFCOM). SCITO is an inter-agency coordinating body that oversees China's regulatory and commercial developments in the information technology and telecommunications sectors. It also implements the central government's policies and measures regarding informatization. The NDRC has the right to review and approve large telecom projects while MOST consults the government on technology issues and China's strategies in technology development. MOFCOM administers import and export licenses.

3.2.1 Equipment vs. services

Currently, China's telecommunications equipment market is open to foreign competition. In contrast, there is no foreign player in its telecom services segment. It has been suggested that China's reservations in opening up its services sector are rooted in concerns about national security (Tang and Lee, 2003). According to Mueller and Lovelock (2000), the first clear documentation of rules on the ban on foreign direct investment in the telecom services sector was Regulation 55, issued by the State Council in August 1993. The regulation contained a strong and explicit ban on FDI and the researchers asserted that the link between the rise of competition and strong policy statements restricting the market access of foreign strategic investors were not coincidental. Reasoning that telecom operators which received foreign funding could erode State control in the market, the State Council reacted accordingly and issued the regulation to curtail such possibilities.

China opened up its equipment market earlier and more intensively than most other countries (Gao and Lyytinen, 2000). Compared to China's 1982 decision, most EU members opened terminal equipment sales to certain other countries in the late 1980s. In fact, Mueller and Lovelock (2000) comment that in telecommunications equipment manufacturing, equity joint ventures and wholly foreign-owned enterprises were commonplace in China and took in billions of US dollars early in the reform process.

However, the openness of the equipment sector stood in stark contrast to that of the telecom services sector. During the whole of the 1990s, China imposed some of the world's tightest restrictions on foreign investment in telecommunication services, such that foreign businesses were prohibited from owning, operating, or managing telecommunication networks or services in China (Mueller and Lovelock, 2000). In contrast, other developing nations in Latin America and Asia opened their doors to FDI in the decade. For example, in February 1997, 55 WTO members representing 69 governments made commitments to permit varying levels of market access and foreign investment in telecommunications services. India permitted 25% foreign equity, Indonesia 35%, the Philippines 40%. Also, since the 1994 rounds of telecom reforms, the number of licensed basic service carriers in China increased from 2 in 1994 to 6 in 2002. In contrast, Australia grew from a base of 2 in 1996 to 85 in 2002 (Fan, 2005).

With China's accession into the WTO, the country has committed to a structured phase-in of reforms to its telecom services sector by late 2006 that will allow foreign companies to own up to 49% of a telecom operator.

3.2.2 Progress made

There has been notable and praiseworthy progress made in the Chinese telecom market in the past decade. The industry has been restructured such that competition now exists and regulation is done by an independent body. In the past eleven years, there have been two rounds of telecom reforms in China. The first occurred in 1994 and the second in 1998.

Prior to 1994, the Chinese telecom market was dominated by China Telecom, the dominant provider that was controlled by the Ministry of Posts and Telecommunications (MPT). Recognizing that the Chinese manufacturing industry was very undeveloped, China adopted a policy of "using markets to exchange technologies" for telecom equipment in order to guarantee telecommunications network development with advanced technologies (MII, 1999; in Gao and Lyytinen, 2000). In 1994, China Unicom was established as a competitor to China Telecom in a move that signified the limited and controlled liberalization of China's basic telecom market. Following that, there was an appearance of competition but China Unicom was disadvantaged in many ways by the incumbent (Yu, Berg et al., 2004).

Then in 1998, a new round of government reforms took place to disengage government and enterprise functions, eliminate monopoly and increase competition (Gao and Lyytinen, 2000). The MII was created by merging the MPT with the Ministry of Electronics Industry. The joining of the two ministries under a new name meant an expansion of regulatory authority to encompass the broader information industry, which reduced fragmentation arising from multiple regulatory voices. In addition, the establishment of the MII meant regulatory and operational functions were nominally split for the first time in fifty years (Zhang, 2001).

Soon after, China Unicom was granted the rights to operate national GSM and CDMA networks and the license to operate domestic long-distance services. The incumbent China Telecom was broken up along four business lines and China Netcom was also

created. Appendix A shows a chart that captures the various phases of the restructuring of China's telecommunications sector.

3.2.3 Fragmented and uncertain

The reforms over the past ten years have served to address some of the problems that existed in the telecommunications industry in China. However, several still remain. Telecommunications policymaking continues to be identified with deep-rooted political involvement, frequent bureaucratic bargaining, and a weak legal institution, which results in an uncertain and inconsistent telecom policy and implementation (Zhang, 2002). Applying institutional theory and bargaining theory, Zhang identified formal and informal institutions in China's telecom industry that caused the climate of uncertainty. Supporting this, Singh (2000) observed that the Chinese state is primarily driven by awarding favors to groups with most access to state decision-making. Such special interests have affected market outcomes, maintaining high entry barriers, reducing transparency, and limiting competition (Yu, Berg et al., 2004).

According to Zhang (2001), the above problems of uncertainty are compounded by the lack of a national legislation in telecommunications. Hence, telecommunications regulations rely extensively on governmental administration and intervention. For instance, for basic telecommunication services, currently there is no transparent licensing criterion in China. Whether an applicant can obtain a license is a political decision subject to fierce bargaining. Approval from the State Council and SPDC is crucial in obtaining a license, especially for a national carrier. Without detailed criteria and clear procedures, license regulation is uncertain and lacks transparency

The fragmentation of the industry is attributable to three factors: significant incumbent power; cross-subsidies across sector and rural-urban areas; and anticompetitive behavior by an incumbent (Yu, Berg et al., 2004). The fragmentation obstructs large-scale reform that impedes the development of the industry.

3.2.4 Gradual change

China has implemented a reform model called "act after trial" (Yu, Berg et al., 2004), whereby a feasible new system is found through some trial that introduces limited but necessary change. This is in contrast to whole-sale issuance of new laws and completely altering the administrative regime. Upon the formal introduction and successful implementation of the new system in a localized setting, an overall reform is subsequently performed, where state directives are issued. Such an "act after trial" approach to policy change can result in disjointed and fragmented policy initiatives that rely on amassing critical support from stakeholders behind broader initiatives.

In addition, according to Gao and Lyytinen (2000), such a system produces lags in administrative reform such that legislative processes take place slower compared to practical needs from rapid market changes. They substantiate this by pointing out that although private enterprise was allowed in the early 1980s in China, not until 1999 was an item protecting private ownership of enterprises added to the Constitution. The

authors further highlight that “Competition Law” and “Antitrust Law”, which are necessary are still absent in China.

3.4 Summary

In this chapter, we provide a context for the research by describing the telecommunications equipment and services sectors in China. The overview presented the recent investment figures, teledensity rates and subscriber levels in China that underlie the most rapidly developing industrial sector in China in the past twenty years. We noted both the non-uniform distribution of teledensity rates and how the national teledensity figure is low relative to other developed countries. Five stakeholders in the Chinese telecommunications industry were then identified and described – the State, incumbent operators, domestic entrants, foreign strategic investors, and domestic champions. Following that, we shifted our focus to the regulatory landscape in China. The functions of the Ministry of Information Industry were outlined and the differences between the equipment and services sectors from a regulatory standpoint were described and accounted for. There has been considerable progress through gradual market and regulatory reform but improvements are still necessary to reduce fragmentation and uncertainty.

We have presented the backdrop against which this thesis research is set. In the following chapter, we proceed to describe the research methodology

CHAPTER 4: Methodology

Having identified in the previous chapter the questions that are being investigated in this thesis, we now move to a description of the study that I have done. My approach to the study of patterns of deal-making in China is organized around four sections. Section 4.1 will address the process of finding and collecting data regarding business ventures in China. The next section will describe the two datasets that resulted from the above process. Following that, section 4.3 will cover the selection of two companies from the datasets and the integration of the collected data into a master deal-centric dataset. Lastly, the final section will elaborate on the process of content analysis and the use of the *General Inquirer* software.

4.1 Finding and Collecting Data

The initial task of the study involved finding publicly available information regarding business deals in China. We needed two databases: (1) a “deals database” of business deals that occurred in the three year period ending 2004; (2) a “disclosure database” of text documents that reported on various companies along three disclosure channels – business news, analyst reports and SEC filings.

4.1.1 The Deals Database

In order to obtain a database of all announced deals in China, we searched for resources that served as aggregated repositories of information that pertained to business ventures.

In the literature, it was found that researchers have employed a variety of methods to collect data regarding business ventures in China. In their study of Sino-foreign joint ventures, Hu, Zhang and Chen (2004) collected data from the Statement of Sino-Foreign Joint Ventures, 1979-1990 that was published in the Almanac of China’s Foreign Economic Relation and Trade². The Statement contained a description of 3071 Sino-foreign joint ventures over that time period. However, the researchers stated that “[e]very year the Chinese government publishes every year information related to a *small subset* of Sino-foreign joint ventures.” (Hu, Zhang et al., 2004, emphasis added). In addition, they found that “data obtained from presumably the most reliable published sources in China are not precise and often contain systematic biases” (Hu, Zhang et al., 2004).

Child and Yan (2003) based their study of international joint ventures on data that was laboriously aggregated from published sources by China’s Ministry of Foreign Trade & Economic Cooperation (MOFTEC), business journals, chambers of commerce and the commercial departments of foreign embassies. Their efforts gave rise to a list of 311

² Ministry of Foreign Economic Relation and Trade, 1980-1991, various editions, Almanac of China’s Foreign Economic Relations and Trade, Beijing, China.

companies that was subsequently filtered down to 67 international joint ventures for the purposes of their study.

It was apparent that there were no established, formal channels for business deal announcements in China. The data collection methods that were employed in the literature had used materials and resources that were not readily available. In addition, it appeared that the resources contained information regarding joint ventures only. For the purposes of the thesis, we purposed to find sources that reported on joint ventures, as well as other ventures such as contract agreements and MoUs. Given the critique by Hu et al. of materials published by the Chinese government, we turned our focus on external sources that reported on business ventures in China.

In our research, we first found published articles by The Economist Intelligence Unit (EIU). The EIU is the business information arm of The Economist Group, which owns the popular and reputable journal, *The Economist*. It was found that the EIU ran regular articles (usually titled “China: Joint ventures, contracts, MoUs and other agreements”) in its publication *Business China* every two to three weeks that contained aggregated business deal activity across several different sectors. The deals were reported across such dimensions as deal participants, type, location and date of agreement.

The EIU articles over a three-year period from 2002 to 2004 were compiled. The information regarding each deal was entered in a database. It was found that there were several articles that were missing in Factiva, which meant that there were pockets of time in the three-year period where reports on deal activity were not available. Coupled with the fact that none of the literature that had been surveyed had cited the use of this resource, it was apparent that another deal aggregation resource was necessary to supplement the database of deals.

Upon further investigation, several published papers were found that were based on data from the publication *China Business Review* (CBR). To study cooperative strategies between two firms in China, Pan and Tse (1996) used a sample size of 7,818 observations of business activities using the CBR articles over the time span from 1979 to 1993. Later, the same authors (2000) compiled and studied a total of 14,080 business activities between 1979 and 1998 to propose and support a hierarchical model of market entry into China. Tse, Pan and Au (1997) tested seven major hypotheses regarding mode of entry and alliance formation using a longitudinal sample collected from the CBR of 2,998 foreign business activities in China between 1979 and 1993.

Published since 1974, the *China Business Review* is the “leading authority on China trade and investment” and is “the only US magazine providing in-depth analysis on China business for multinational companies.” (China Business Review, 2005) The publication’s circulation includes the US, PRC, and Hong Kong governments. This bimonthly publication is the official magazine of the United States-China Business Council, Inc. (USCBC). The USCBC is a private, non-profit, non-partisan, member-supported organization, and serves as the chief organization of US corporations engaged in business relations with China. The council is headquartered in Washington D.C. and

has field offices in Beijing and Shanghai. In the past, the USCBC has served as an esteemed host for senior visitors from China and from the United States government, including Chinese President Hu Jintao, Chinese Premier Wen Jiabao, former Chinese President Jiang Zemin, U.S. Commerce Secretary Donald L. Evans, and U.S. Trade Representative Robert B. Zoellick.

In every bimonthly issue, there is a regular article entitled “China Business” that summarizes many business deals that occur in China in a two-month period between a domestic firm and a multinational company. These deals are either reported in the business press or revealed to the CBR by the participants of a particular deal. Deals are reported across a number of different industry categories such as automotive; computing, hardware and software; and telecommunications. Within each industry category, deals are further grouped under “China’s exports”, “China’s imports”, and “investments in China.” The categorization and groupings are assigned by CBR.

Given the large volume of deals that were reported during the three year period across all the industries, it was decided that the scope of the thesis research would be restricted to the telecommunications industry. Therefore, the CBR business activities data for the telecommunications industry category was compiled in detail across the years 2002 to 2004 and subsequently entered into a database and analyzed. In addition, counts of deals were made across the years 1997 to 2004.

4.1.2 The Disclosure Database

A fundamental assumption in the study was that the more that a business deal was mentioned in various channels of disclosure, the more important it was. In addition, the more positive the words used in describing and reporting a deal, the better the outlook and expected outcome that was projected onto the business deal.

In order to study the outlook and coverage of business deals in China, it was necessary to build a database of text documents that reported on multinational companies that conducted business in China. These documents were categorized into three general areas. First, there were newspaper articles and newswires from the business press. The second category was analyst reports, and the third was government filings. This categorization scheme was adopted based on previous research by Kothari and Short (2004).

Three different electronic resources were used for each channel of disclosure. First, business news articles were collected using the services of Factiva®, a Dow Jones & Reuters Company. Factiva’s online service provides access to global electronic content from over 9000 leading news and business publications worldwide, including *The Wall Street Journal*, *The New York Times*, and Dow Jones newswires (Factiva, 2005).

Second, analyst reports were collected off Investext® Investment Research. The latter is an electronic database managed by Thomson Research that features research reports written by analysts at over 800 leading investment banks, brokerage houses and consulting firms worldwide. These organizations include Prudential Equity, Morgan

Stanley and CitiCorp. Nearly 2000 new reports are added each day and most reports are downloadable in PDF file format (Thomson Research, 2005).

Finally, government filings were collected from the web accessible databases of the U.S. Securities and Exchange Commission (SEC). The EDGAR electronic database, which stands for Electronic Data Gathering, Analysis, and Retrieval, contains all submissions by companies that are required by law to file forms with the SEC (SEC, 2005).

Having identified the various electronic resources for each channel of disclosure, a closer look at each channel was taken. It was found that business news articles achieved high granularity in deal reporting, but for analyst reports and SEC filings, there was little mention of specific deals in China. Analyst reports might sometimes provide lists of Chinese business ventures that had been struck by the company covered in the most recent quarter. On rare occasions, a few sentences might be devoted to one or more deals that described their significance. However, in both disclosure channels, there was no way to determine whether the outlook presented by the report or filing related directly to particular deals.

In light of this, a decision was made to alter the research approach. The initial plan had been to conduct an empirical study of the outlook and coverage of deals through the three channels of disclosure. Given the limitations posed by analyst reports and SEC government filings, the quantitative aspect of the research study would be confined to business news articles. However, the analyst reports and SEC filings would offer qualitative insights to the deals or companies that were studied.

4.2 Describing the Data

Two databases – the deals database and the disclosure database - resulted from the completion of the finding and collecting process describe in the previous section.

The deals database consisted of 405 telecommunications business deals that took place during the three year period of 2002 to 2004. Each deal had a unique identification number. Information regarding each deal was codified along several attributes, which are captured in table 4.1 below.

Data Attributes	Description
ID	Identification number; unique to each entry
DateReported	The date that the business deal was reported in CBR; expressed as YYYYMM
Category	The industry category that the business deal is organized under (e.g. telecommunications)
Grouping	The grouping that the business deal is

	organized under (e.g. China's Exports)
NumParticipants	Number of participants in the business deal
DomesticCoyName	Name of the China-based domestic company that is a participant in the business deal
DomesticCoyCountry	Country where the domestic company is based; default value is "China"
ForeignCoy1Name	Name of the China-based domestic company that is a participant in the business deal
ForeignCoy1Country	Country where the domestic company is based; default value is "China"
AgreementType	Type of business deal (e.g. contract, joint venture)
Location	Geographical area that is targeted by the business deal (where reported); if location is within China and details are reported, the location is specified as the province(s); otherwise, the location is specified as a country
Quarter	The quarter during which the business deal is agreed upon; expressed as YYYY, followed by Q1 to Q4
Details	Details concerning the business deal that are reported in the CBR article
AgreementValue	Financial value of the business deal, specified in US\$ millions (where reported)
AgreementDate	Date when the business deal takes place

Table 4.1: Codified attributes of business deals in the deals database

The second database was the disclosure database. From the Factiva repository of business news articles, it was found that there was a large volume of articles for multinational companies. The news articles were all in the English language and were primarily written for an international audience. We had initially set out to collect business news reports on 11 companies³ across three industry sectors. In the process, we developed a sense of the volume of data concerned. For relatively smaller companies such as Juniper Networks and LSI Logic, there were approximately 100 to 300 business news articles reporting on the company per quarter. Larger companies such as Microsoft garnered a minimum of 5657 and a maximum of 8693 articles per quarter over the three year period.

³ The 11 companies were for telecommunications, Cisco Systems, Siemens, Juniper Networks, LM Ericsson; for computing, IBM Corp., Hewlett-Packard, and Microsoft Corp.; for storage, EMC Corp., Veritas, LSI Logic, and Sun Microsystems.

4.3 Selecting Companies and Integrating Databases

Based on the high volume of data, it was apparent that the scope of companies studied would have to be narrowed down. A conservative number of two companies was selected so that resources could be devoted to achieve depth as opposed to breadth in this stage of the research.

The approach would be to distil from the deals database all the business deals that involved the two selected companies. Following that, for each deal, business news articles from the disclosure dataset that reported on the specific deal would be collected and placed into an integrated “deal-centric dataset.”

From the deals database, the top five foreign companies ranked by number of deals were determined. Table 4.2 shows the results.

Rank	Company Name	Number of Deals⁴	Percentage of Total
1	UTStarcom Inc.	34	8.48%
2	LM Ericsson AB	28	6.98%
3	Nokia Corp.	23	5.74%
4	Nortel Networks	21	5.24%
4	Alcatel Shanghai Bell	21	5.24%

Table 4.2: Top 5 foreign companies based on number of deals

It was observed that Ericsson and Nokia were mainly focused in the mobile handset business, while UTStarcom and Nortel were more involved in wireline and wireless infrastructure. For the purpose of the research, it would be advantageous to investigate two companies that were operating in fairly similar areas in order to make more meaningful comparisons of possible differences in outlook and coverage of deals.

In addition, business deals that involved UTStarcom were uniquely characterized by the comprehensive reporting of business deal value. Thirty or 88.2% of the 34 UTStarcom deals had an associated deal value, reported in millions of U.S. dollars. In contrast, only 57.1% of Ericsson deals, 43.5% of Nokia deals, 38.1% of Nortel deals and 33.3% of Alcatel Shanghai Bell deals had reported deal values according to the CBR articles.

Based on the above considerations, UTStarcom and Nortel were selected as the two companies that would be studied in detail in the thesis research. The ticker symbols for these two companies are UTSI and NT respectively. The intent was to push a small set of companies all the way through the research methodology in order to pave the way for larger studies of more companies to be conducted in the future.

⁴ As reported in the regular *China Business Review* articles entitled “China Business.”

Following the selection of the two companies, there was now a need to integrate the deals database and the disclosure database into a new deal-centric database. This new database would contain business news articles that reported on every business deal between UTStarcom and Chinese companies, as well as between Nortel and Chinese companies.

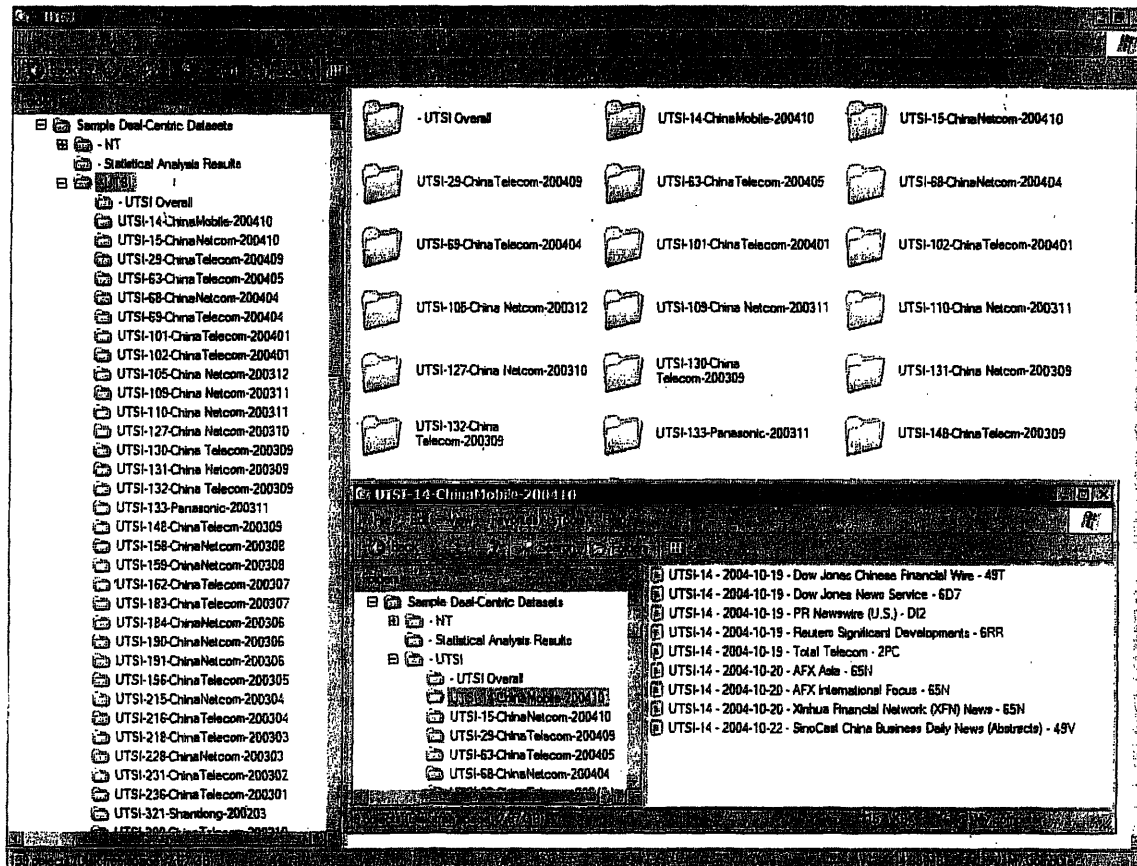


Figure 4.1: Screen shot of deal-centric database

Practically, all data was stored and processed electronically using personal computers. With reference to figure 4.1, the integrated electronic database comprised of multiple folders, where each folder represented a business deal. The naming convention for the folders was “<Deal ID> – <Domestic Company> - <Date of Deal>” where Deal ID consisted of a company ticker symbol and a unique number identifier. In addition, each folder contained the business news articles in text (.txt) format. For example, one folder named “UTSI-14-ChinaMobile-200410” contained articles that reported on a UTStarcom deal with China Mobile, with deal ID UTSI-14 that took place in October, 2004.

The process of integrating the deals and disclosure databases involved searching the disclosure database for keywords that uniquely identified a specific deal in the deals database. The keywords were obtained from deal attributes such as deal value, geographical location of the deal and domestic company name. The search was performed using Factiva’s search engine that was built into its online electronic database. Search results returned were screened to determine if the articles reported on the specific

deal in question. The collected articles ranged from press releases about a specific deal to more detailed reports or analyses that made mention of the deal. The relevant articles were downloaded from Factiva as aggregated text files and were separated and renamed into a standardized file header format using a Java parser⁵.

In order to ensure that as many deals that occurred in the three year period ending 2004 were captured in the deals database, information concerning deals by Nortel and UTStarcom from the CBR and EIU articles was compared. It was found that for both companies, some deals that were reported in CBR were not covered in EIU, and vice versa. Therefore, the union of the two sets of deals reported by CBR and EIU was taken. Moreover, additional resources such as lists of deals found in analyst reports and Factiva were used to develop a comprehensive set of deals for which articles were collected. With reference to table 4.3, the final dataset contained a total of 73 UTStarcom deals and 40 Nortel deals in China for the period 2002 to 2004.

	UTStarcom	Nortel
Number of deals (2002-04) in database	74	40
Number of news articles reporting on business deals	408	494

Table 4.3: Summary of the integrated deal-centric database

4.4 Content Analysis

After the process of integrating the deals and disclosure databases had been completed, the resultant deals-centric database contained a total of 902 business news articles across 114 deals. These articles were stored in text (.txt) format. The next step was to perform content analysis on all the articles.

Content analysis refers to “a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use”(Krippendorff, 2004, 18). The underlying principle of content analysis is that a large volume of text can be grouped into a smaller set of content categories. Each category contains one or more words and phrases that share similar meanings (e.g. grouping synonyms together) or connotations (e.g. grouping words that are associated with concepts such as market share) (Kothari and Short, 2004).

⁵ The parser was coded by Francois de Laigue, a fellow MIT graduate research assistant.

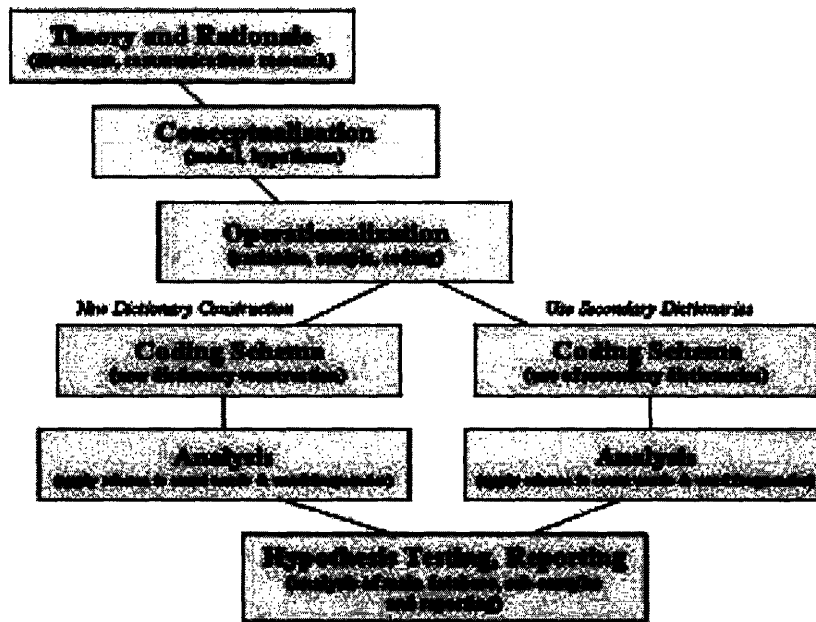


Figure 4.2: Conceptual flow of content analysis⁶

Figure 4.2 illustrates the flowchart of a typical process for a study that involves content analysis. The theory and rationale for content analysis is first developed in theory through the study of disclosure and communications research. Following that, an information model is conceptually built, along with hypotheses for the study. In the subsequent operationalization stage, researchers determine the content categories, or variables that will be used for the study. In addition, data samples are collected. After that, new or existing dictionaries of terms are used as coding schema to classify words and word groups before they are analyzed. The results of the analysis are interpreted and used to verify the original hypotheses.

Although content analysis originated historically from studies of journalism and mass communication, it has since been used in a variety of different fields including psychiatry, psychology, history, anthropology, education, literary analysis and linguistics (Stone, Dunphy et al., 1966). More recently, Krippendorff (2004) identified areas of likely success for the application of content analysis. He concluded that “[c]ontent analyses are most successful when they focus on facts that are constituted in language, in the uses of the very texts that the content analysts are analyzing.”(Krippendorff, 2004, 75) He categorized these facts into four classes: attributions, social relationships, public behaviors and institutional realities.

In the context of this thesis study, the first of these four classes is applicable. Krippendorff describes attributions as concepts, attitudes and beliefs that manifest

⁶ Taken from Kothari and Short (2004) pp. 28

themselves in verbal expression that are acquired mostly in conversations, but also through reading various media of communication. For this study, the objectives of performing content analysis on the business news articles are to, among other things, capture and quantify the degree of positive and negative attitudes and beliefs that are ascribed to various business deals.

The specific content analysis tool that was employed in this study was the *General Inquirer* (GI) content analysis software. Developed and written by Professor Philip Stone and colleagues in Harvard University and later by Vanja Buvac and colleagues, the GI software is essentially a tool to map content (Stone, 1997). The software classifies words and performs word counts of submitted text inputs based on dictionary supplied categories. The existing GI software contains 189 such categories. In the context of this study, we were primarily concerned with four of these categories. Table 4.4 summarizes the details of these four categories.

Name of category	Description	Examples of associated words
<i>Positiv</i>	1,915 words of positive outlook	acclaim, advance, affirm
<i>Negativ</i>	2,291 words of negative outlook	abandon, adverse, allegation
<i>Means</i>	244 words denoting objects, acts or methods utilized in attaining goals	decide, fund, implementation
<i>Goal</i>	53 names of end-states towards which muscular or mental striving is directed	accomplishment, profit, reward,

Table 4.4: Summary of four *General Inquirer* dictionary supplied categories

The four categories were selected because they were relevant and useful to measure the outlook rendered for each business deal. Other dictionary supplied categories could have been included in the study but in the interest of bounding the study within the practical limits of time and manpower, this thesis study was isolated to the four categories.

The GI software produced raw word counts and scaled frequencies for each of the 902 text articles. The scaled frequencies are expressed as the percentage of total classifiable words in the article that were classified in a dictionary supplied category. Please refer to Appendix B for a more detailed description of the *General Inquirer* software that includes examples of two submitted text articles and their resultant GI output.

After processing all the text articles using GI, we obtained a large spreadsheet of scaled frequencies across the four categories. The next step involved performing statistical analysis on the values in the spreadsheet. More specifically, univariate analysis was

conducted in order to formulate statements about the degree of deviation in outlooks for various deals.

In addition, the GI output enabled comparisons to be made across different deals along different dimensions. Such comparisons were made across company, time period, product line and individual deals. Several deals were selected based on a large extent of coverage by the business press and the highest degree of positive outlook that was projected. These deals were reviewed in greater detail by reading the individual articles that reported on them. Through the comparisons and article reviews, patterns and possible reasons for the coverage and outlook were identified in the process.

Having described the methodology for this study, the chapter that follows will present the findings from the analysis.

4.5 Summary

In this chapter, we described the methodology for the research study of business venturing in the Chinese telecommunications industry. The process of collecting information and building the deals and database databases were presented. Data resources were identified and referred to. In addition, the data gathered was described and summarized. From this, two companies – UTStarcom Inc. and Nortel Networks Corp. – were targeted and studied more extensively.

Following that, we elaborated upon the deals-centric database that involved the integration of the deals and disclosure database with respect to the UTStarcom and Nortel business ventures that took place in China from 2002 to 2004. Content analysis was then introduced as a research method to analyze the data in the deal-centric database. Using the content analysis software the *General Inquirer*, the word counts for 4 content categories were studied to determine whether differences existed along subjective attributes of the business deals.

Having laid out the methodology that was employed in this research, we will proceed to present the research findings in the next chapter.

CHAPTER 5: Findings

Following the description of the research methodology in the previous chapter, the findings from the various stages of the study are reported in this chapter. The general findings from the deals database are first reported, based on coverage by the *China Business Review*. Subsequently, observations from the deal-centric dataset comprising UTStarcom and Nortel deals are described before the results of the content and statistical analysis stages are reported.

5.1 General findings from the deals database

Based on the data collected from the *China Business Review* articles, several findings regarding the occurrence of Sino-foreign business ventures were obtained.

5.1.1 Deal occurrence

A count of business deals was conducted across an 8-year period from 1997 to 2004. Figures 5.1 to 5.4 in the following two pages capture some of the findings from this deal count. First, the total number of Sino-foreign telecom ventures in China that are reported in the CBR are shown in Figure 5.1. Across the 8-year period, the highest occurrence of deals took place in the 2nd quarter⁷ of 2002 when 56 deals were reported in the CBR. In contrast, the lowest deal volume is found in the final quarter of 1997, when only 14 ventures took place. It was also observed that the average number of deals per quarter increased after 1997. In addition, 2002Q4 and 2003Q1 appear to have unusually lower overall deal occurrence relative to the adjacent periods. A similar phenomenon is apparent in 2001Q4. The latter could be possibly accounted by the restructuring of China Telecom and China Netcom.

Figure 5.2 shows the variation of reported import contracts in China across time. It appears that there has been a consistently high occurrence of at least 14 such contracts in every quarter after 1997, with the exception of 2004Q4. The same increase in deal occurrence after 1997 as seen in Figure 5.1 is also observed in import contract volume. In addition, a declining number of import contracts are signed leading up to 2004Q4.

The changes across time in the quarterly occurrence of reported Sino-foreign joint ventures and memoranda of understanding (MoU) are shown in Figure 5.3. It is apparent that this category of deals exhibits flux, with a high volume of joint ventures and MoUs occurring between late 1998 to early 2000. Moreover, since the first quarter of 2002, there is a decreasing trend in the signing of such deals. A peculiarly high volume of joint ventures and MoUs were agreed in 2002Q1.

⁷ The annual quarters are defined as such: January 1 to March 31, quarter 1; April 1 to June 30, quarter 2; July 1 to September 30, quarter 3; October 1 to December 31, quarter 4

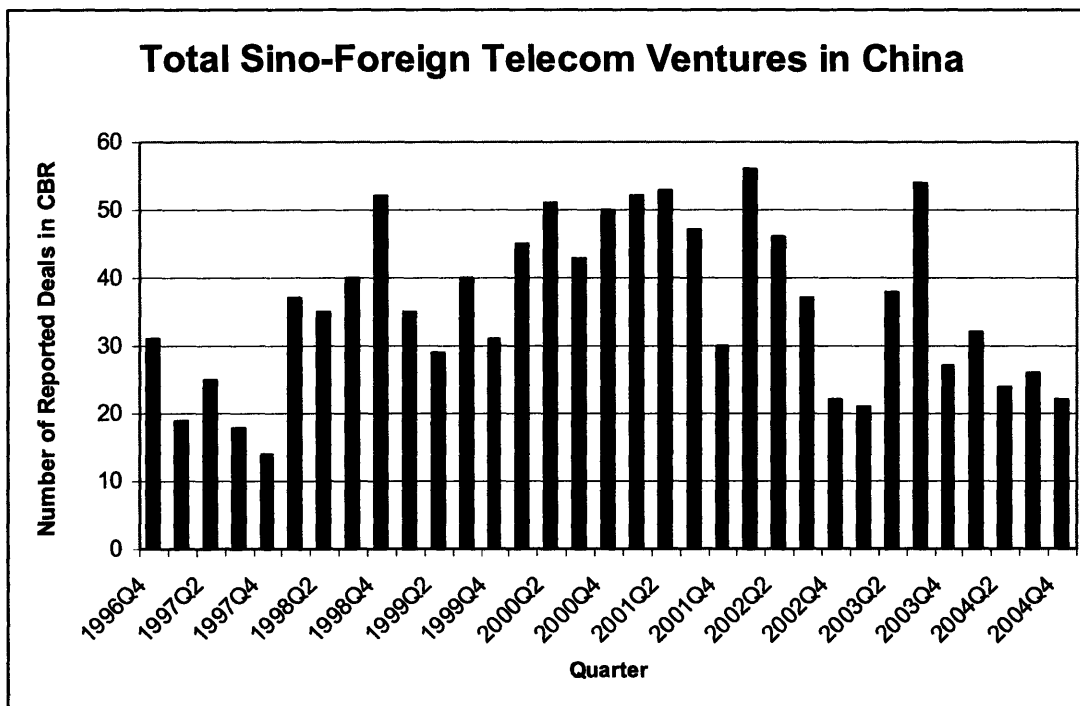


Figure 5.1: Total Sino-foreign telecom ventures, both import and export, in China (as reported in the *China Business Review*)



Figure 5.2: China's Sino-foreign import contracts in telecommunications (as reported in CBR)

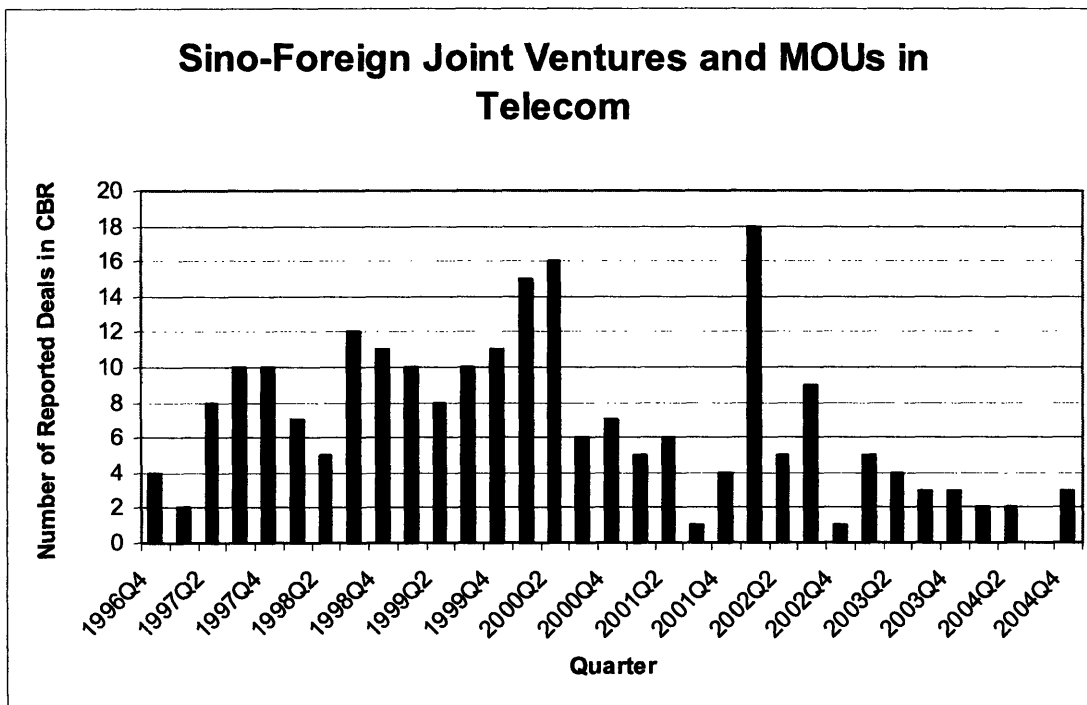


Figure 5.3: Sino-foreign joint ventures and MOUs in telecommunication (as reported in CBR)

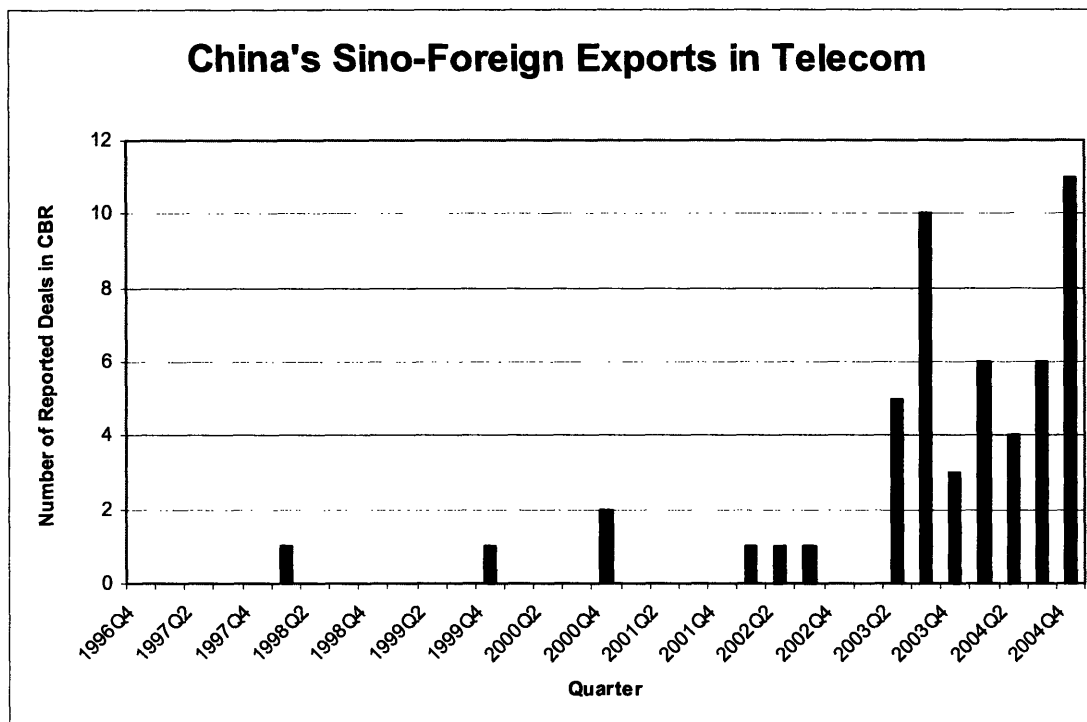


Figure 5.4: China's Sino-foreign exports in telecommunications (as reported in CBR)

Figure 5.4 shows the volume of export deals that Chinese companies have struck with foreign business partners. Early on, there existed a sporadic occurrence of such deals but since 2002Q2, a growing number of export deals have been agreed upon. This trend is accentuated by the observation that the peak volume of 11 export deals occurred in the most recent fourth quarter of 2004.

5.1.2 Top companies

Having summarized the results obtained from the deal count from CBR articles, we take a closer look at the three-year period between 2002 and 2004.

With reference to tables 5.1 and 5.2, the top five foreign and domestic companies were identified based on total number of business ventures agreed upon. The first table lists American company UTStarcom Inc. as the top foreign company. It is followed by Sweden-based Ericsson, Finnish company Nokia, Canada-based Nortel Networks and Alcatel Shanghai Bell, which is a Sino-French joint venture.

Rank	Company Name	Number of Deals ⁸	Percentage of Total
1	UTStarcom Inc.	34	8.48%
2	LM Ericsson AB	28	6.98%
3	Nokia Corp.	23	5.74%
4	Nortel Networks	21	5.24%
4	Alcatel Shanghai Bell	21	5.24%

Table 5.1: Top 5 foreign companies based on number of deals from 2002 to 2004

Referring to table 4.2, China Mobile agreed on the highest number of business ventures, followed closely by China Telecom, then China Unicom. China Netcom and Huawei Technologies come in tied at fourth.

Rank	Company Name	Number of Deals ⁹	Percentage of Total
1	China Mobile	64	15.65%
2	China Telecom	62	15.16%
3	China Unicom	58	14.18%
4	China Netcom	35	8.56%
4	Huawei Technologies	35	8.56%

Table 5.2: Top 5 domestic companies based on number of deals from 2002 to 2004

⁸ As reported in the regular *China Business Review* articles entitled "China Business."

⁹ *Supra.* note 2

5.1.3 Export deals

It was observed that Huawei Technologies and Zhongxing Telecom (ZTE) Corp. were responsible for a large proportion of the export deals, with these two telecommunications equipment manufacturing companies accounting for 27 and 17 respectively of the 48 export deals that took place in the three-year period. This represented 56.25% and 35.4% of total telecom export deals in China, as reported by the CBR. Looking closer at the attributes of the export deals, it was found that numerous agreements were made by the two Chinese companies with companies in developing countries such as Pakistan, Brazil, Indonesia and Russia. However more recently in 2004, deals were also struck with companies in developed markets such as Sweden.

5.1.4 Reported deal values

Of the 405 reported deals in the CBR that took place between 2002 and 2004, only 164 or 40.5% had reported values in millions of U.S. dollars. An analysis of the spread of deal values across time yielded a scatter plot which is presented in Figure 5.5. There does not appear to be patterns or specific clusters of plots in the figure. It was observed that a large proportion of the 164 deals had reported values that fell within the \$10 to \$100 million range. In general, it also appeared that several deals that were valued at less than \$10 million were struck in early 2002. However, the occurrence of such deals showed a declining trend across 2003 and 2004.

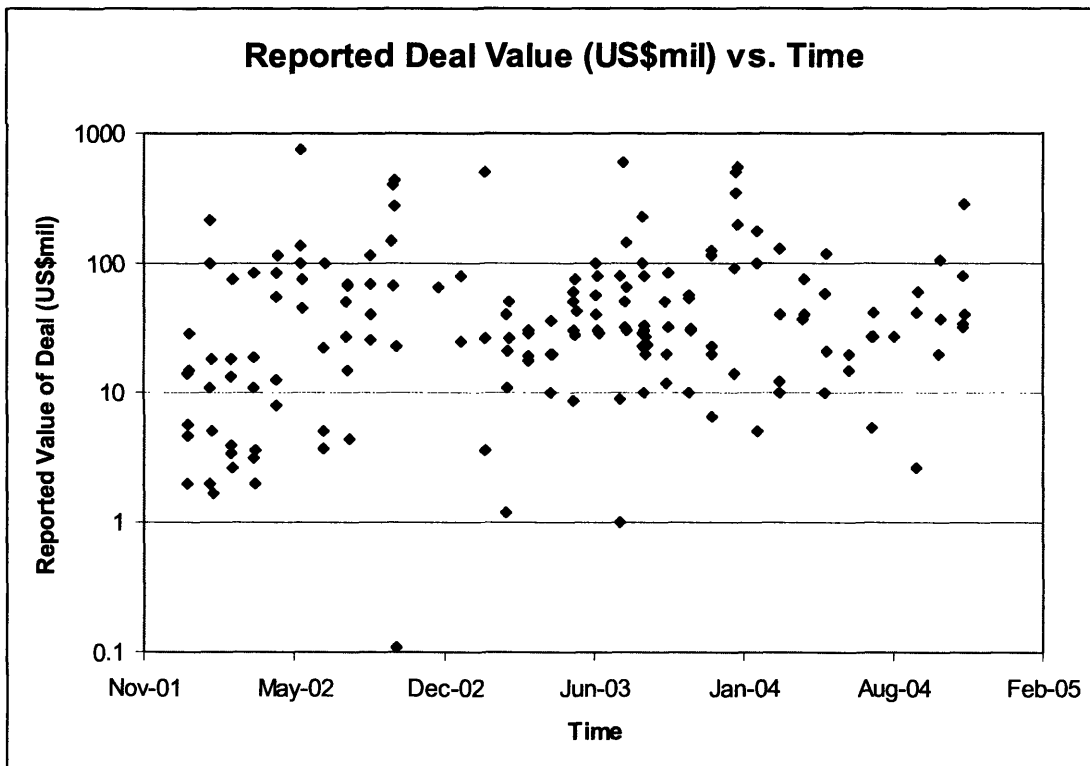


Figure 5.5: Scatter plot of reported deal value (in US\$ millions) across time period

5.2 Specific findings from the deal-centric dataset

The previous section described the findings from the deals database that was put together based on reports from the *China Business Review*. This next segment focuses on the findings that were obtained from the integrated deal-centric dataset that was organized around UTStarcom Inc. and Nortel Networks Corp. A description of the process by which the dataset was put together is provided in section 4.3.

A total of 74 UTStarcom deals and 40 Nortel deals were found for the three-year period ending 2004. Each of these deals were uniquely identified with an ID and these identifiers will be used in the rest of this thesis when references are made to specific deals. Appendix C contains a list of all these deals for both companies, including deal attributes such as deal ID, geographical location, deal value, deal participants, and agreement date.

5.2.1 Deal coverage

Based on the total number of deals found for UTStarcom and Nortel, a comparison was made against the number of deals that were reported in the publications that were used in the research. With reference to table 5.3, it was found that the *China Business Review* coverage in its regular “China Business” articles extended to only 45.9% of UTStarcom deals and to 50% of Nortel deals. In the case of the *Economist Intelligence Unit* articles, 63.5% of UTStarcom deals and 59.4% of Nortel deals were reported.

	UTStarcom	Nortel
<i>Deal-centric Dataset</i>		
Number of deals (2002-04) found in thesis research	74	40
<i>China Business Review (CBR)</i>		
Number of deals reported in CBR	34	20
% of deals reported in CBR	45.9%	50.0%
<i>Economist Intelligence Unit (EIU)</i>		
Number of deals reported in EIU	47	19
% of deals reported in EIU	63.5%	59.4%

Table 5.3: Summary of coverage by publications for UTStarcom and Nortel deals (2002 to 2004)

5.2.2 Geographical distribution

Deal counts were performed across the Chinese provinces in order to determine the geographical distribution of the UTStarcom and Nortel business deals. If a deal pertained to more than one province, then it was counted across all affected provinces. For

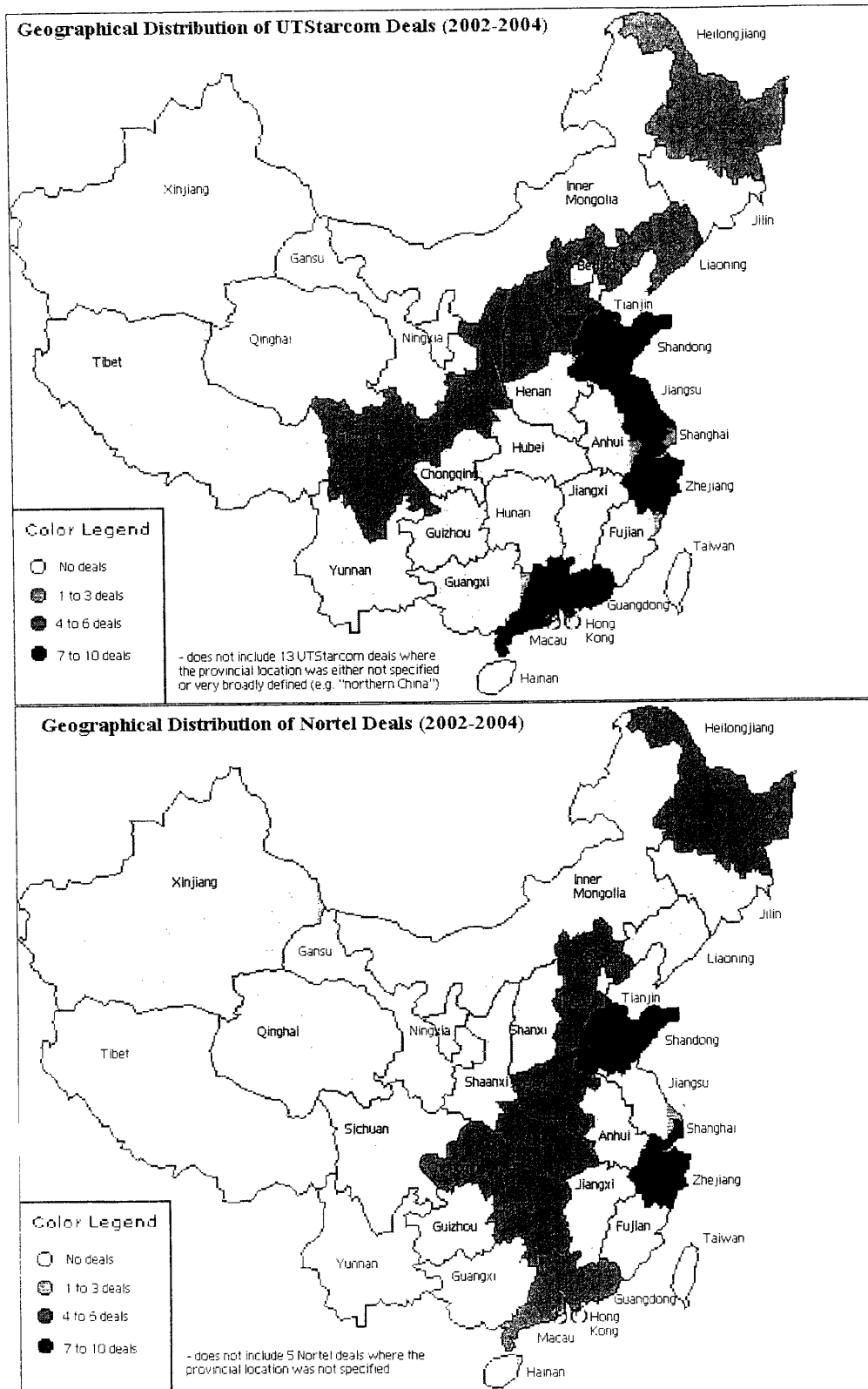


Figure 5.6: Geographical distribution of UTStarcom and Nortel deals (2002-2004)

example, for the UTStarcom contract (U-10) from China Telecom for PAS and iPAs deployments in Jiangxi, Sichuan and Shaanxi, the deal counters in these three provinces were incremented by one when U-10 was counted.

The results of the tallied deal counts across all Chinese provinces are shown in figure 5.6. It was observed that business ventures for both UTStarcom and Nortel were largely concentrated along the eastern coastal provinces. In particular, Shandong, Jiangsu, Zhejiang and Guangdong were the subject of many business deals. In contrast, the western provinces were involved in less deals. This was especially true for the four most inland provinces - Xinjiang, Tibet, Qinghai and Gansu. Southwestern China did not appear to figure in Nortel's business ventures, while northwestern China seemed to be excluded from the provinces that were affected by UTStarcom deals. It should be noted that the research was primarily focused on mainland China and therefore does not consider deals made for Taiwan, Hong Kong or Macau.

5.3 Findings from content analysis

A total of 902 articles that reported on the 114 deals made up the deal-centric dataset. The text in each of the articles was input into the General Inquirer content analysis package. Following that, statistical analysis was performed on the compiled GI output for all articles. This sections that follow describe the results of the statistical analysis, beginning first with general descriptive statistics before looking at comparisons across different deal attributes.

5.3.1 General descriptive statistics

Table 5.4 shows the general descriptive statistics for the deal-centric dataset across the 4 *General Inquirer* categories – *Positiv*, *Negativ*, *Goal* and *Means*. With reference to the *Positiv* row, it was observed that an average of 4.306% of a text article contained words that offered a positive outlook on the subject matter. The values in this category ranged from a minimum of 0.529 to a maximum of 10.219. Similarly, the mean values in the *Negativ*, *Goal* and *Means* categories were 0.721, 0.399 and 4.728 respectively.

GI category	Count	Mean	Std. Dev.	Var.	Std. Error	Min	Max
<i>Positiv</i>	902	4.306	1.799	3.325	0.060	0.529	10.219
<i>Negativ</i>	902	0.721	0.762	0.580	0.025	0.000	4.845
<i>Goal</i>	902	0.399	0.498	0.248	0.017	0.000	3.704
<i>Means</i>	902	4.728	2.330	5.428	0.078	0.000	12.987

Table 5.4: Descriptive statistics of 5 General Inquirer content categories

5.3.2 Comparison across companies

The first dimension of comparison was by company. Of the 902 articles in the deal-centric dataset, 408 reported on UTStarcom deals while the other 494 addressed Nortel ventures.

GI category	Summary				ANOVA			
	Coy	Count	Mean	Std. Dev.	Sum of Sq.	Mean Sq.	F-value	P-value
<i>Positiv</i>	UTSI	408	3.627	1.521	350.68	350.68	123.10	<0.001
	NT	494	4.866	1.818				
<i>Negativ</i>	UTSI	408	0.544	0.623	23.33	23.33	42.03	<0.001
	NT	494	0.867	0.832				
<i>Goal</i>	UTSI	408	0.323	0.416	4.46	4.46	18.37	<0.001
	NT	494	0.462	0.549				
<i>Means</i>	UTSI	408	2.979	1.325	2290.2	2290.2	792.63	<0.001
	NT	494	6.172	1.962				

Table 5.5: Results of analysis of variance (ANOVA) across companies on GI categories, at 5% level of significance

When compared across companies, the articles showed a statistically significant difference in the mean values in each of the 4 GI categories. Therefore, the null hypothesis that the means for the 4 GI categories in the population are equal is rejected. It was also noteworthy that in all 4 categories, articles that reported on Nortel deals had higher mean values relative to UTStarcom articles. These findings are captured in table 5.5 above.

5.3.3 Comparison across time

When analyzed across the 12 quarters in the three-year period between 2002 and 2004, the 902 articles exhibited statistically significant differences in the mean values in the 4 GI categories. These results are summarized in table 5.6 below.

	DF	Sum of Squares	Mean Square	F-Value	P-Value
<i>Positiv</i>	11	123.83	11.26	4.445	<0.0001
<i>Negativ</i>	11	26.00	2.364	4.666	<0.0001
<i>Goal</i>	11	10.49	0.954	5.383	<0.0001
<i>Means</i>	11	286.31	26.03	6.791	<0.0001

Table 5.6: ANOVA table for comparison across 12 time quarters, at 5% level of significance

Therefore, the null hypothesis that mean values across time for each of the 4 GI categories have equal means was rejected.

5.3.4 Comparison across product line

The 73 UTStarcom deals were organized into 6 product lines – PAS, iPAS, PAS and iPAS, NetRing, 3G, and Wireline. Likewise, the 40 Nortel deals were organized into 8 product lines – Optera, Passport, Optera and Passport, GSM, CDMA2000 1x, Communication Server 2000,3G and others. Therefore in the analysis of variance in the scaled word counts for the *Positiv*, *Negativ*, *Goals*, *Means* GI categories, UTStarcom and Nortel products exhibited 5 and 7 degrees of freedom (DF) respectively.

	DF	Sum of Squares	Mean Square	F-Value	P-Value
<i>Positiv</i>	5	65.18	13.04	5.972	<0.0001
<i>Negativ</i>	5	9.51	1.90	5.130	<0.0001
<i>Goal</i>	5	10.58	2.12	14.219	<0.0001
<i>Means</i>	5	44.29	8.859	5.283	<0.0001

Table 5.7: ANOVA table for UTStarcom scores for product lines, organized by company, at 5% level of significance

	DF	Sum of Squares	Mean Square	F-Value	P-Value
<i>Positiv</i>	7	155.59	22.23	7.525	<0.0001
<i>Negativ</i>	7	14.24	2.034	3.018	<0.0001
<i>Goals</i>	7	13.00	1.858	6.652	<0.0001
<i>Means</i>	7	323.39	46.20	14.30	<0.0001

Table 5.8: ANOVA table for Nortel scores for product lines at 5% level of significance

With reference to table 5.7 and table 5.8, it was found that for both companies, at the 5% significance level, there exist significant differences across the 4 GI categories for the various product lines. The null hypothesis of equal population means across products is therefore rejected.

In addition, the various product lines were ranked by the *Positiv* scores and the top 3 products for both companies were extracted. This served to identify the product lines that were accorded the most positive outlooks by the business press.

Coy	Rank	Product	<i>Positiv</i> Mean	Num. of deals	Num. of articles
UTSI	1	3G	5.021	2	23
	2	AN-2000	3.894	7	39
	3	PAS and iPAS	3.838	8	34
NT	1	Passport	5.990	10	73
	2	Optera	5.043	9	121
	3	GSM	4.714	5	82

Table 5.9: Top 3 UTStarcom and Nortel product lines based on *Positiv* means

Referring to Table 4-9 above, the UTStarcom product lines which received the highest *Positiv* means were its 3G products and services based on W-CDMA and TD-SCDMA, its AN-2000 broadband wireline networking platform, and its combined PAS and IP-based PAS offerings. For Nortel, the top ranked products were its Passport multiservice switching platform, its Optera optical long haul transmission and switching platform, and its GSM wireless infrastructure products.

5.3.5 Comparison across individual deals

Table 5.10 below shows the results of an analysis of variance across the 108 individual deals¹⁰ for the 4 General Inquirer categories.

	DF	Sum of Squares	Mean Square	F-Value	P-Value
<i>Positiv</i>	107	1061.56	9.921	4.251	<0.0001
<i>Negativ</i>	107	128.41	1.20	2.416	<0.0001
<i>Goal</i>	107	67.96	0.64	3.251	<0.0001
<i>Means</i>	107	3181.31	29.73	13.811	<0.0001

Table 5.10: ANOVA table for comparison across individual deals, at 5% level of significance

It was observed that there was a statistically significant difference in the scaled word counts in the 4 GI categories for each of the individual deals. Therefore, the null hypothesis that the dataset contained equal population means for the GI categories was rejected.

In addition to the analysis of variance, individual deals were also ranked according to the number of articles that reported on the deal. This latter number was assumed to be a proxy measure of importance of a deal. In addition, the deals were also ranked based on the average values in the *Positiv* GI category. These values were taken as proxy measure for the degree of positive outlook that was accorded to various individual deals.

¹⁰ There were a total of 114 business deals collected in the deals-centric dataset. However, no business news articles were found for 6 deals (U-1 to U-6). These deals were listed in Morgan Stanley (2003). Therefore, the ANOVA was conducted for the 108 deals for which business news articles were available.

Table 5.11 illustrates the top 3 UTStarcom deals when ranked by number of articles that covered the deal story.

Rank	Deal ID	Num. of articles	Brief description of deal
1	U-53	17	Agreed to establish a \$10m joint venture in Zhejiang with Panasonic to build 3G handsets for international and domestic markets
2	U-38	16	Awarded \$20m contract to supply China Telecom with PAS equipment in Guangdong
3	U-57	15	Awarded contract by China Telecom worth \$200m for deployment of PAS system in 12 provinces

Table 5.11: Top 3 UTStarcom deals ranked by coverage

With reference to table 5.11, the UTStarcom deal that garnered the most coverage by the business press was an agreement between the company and Matsushita Electric Industrial Co Ltd's Panasonic Mobile Communications worth \$10 million to establish a joint venture together. Based in Hangzhou, the venture would focus on design, development, and manufacturing of third-generation (3G) telecommunications system equipment. The new systems would run on W-CDMA, a standard popular in Europe and TD-SCDMA, a home-grown wireless technology standard in China. The deal was covered in articles and newswires by *Dow Jones*, *Reuters*, *PR Newswire*, *The Asian Wall Street Journal*, *South China Morning Post*, *AFX Asia*, and *Total Telecom*. The mean positive outlook measure for this deal was 3.88.

The deal with the second highest coverage was a \$20 million contract by Guangdong Telecom, a subsidiary of China Telecom to expand its existing IP-based PAS network. The contract encompasses additional Xiaolingtong handsets for sustained subscriber growth and infrastructure expansion for the IP-based PAS system in 5 cities in Guangdong. Two months after the Xiaolingtong service was launched in Zhongshan, Foshan, Shunde, Dongguan and Guangzhou, 300,000 subscribers had signed up and consequently, there arose a need for system expansion. The deal was covered in articles and newswires by *Dow Jones*, *Reuters*, *PR Newswire*, *The Asian Wall Street Journal*, *Interfax China*, *AFX Asia*, and *Total Telecom*. The mean positive outlook measure for this deal was 3.02.

The next UTStarcom deal was reported in 15 articles. It was a \$200 million contract awarded by China Telecom to expand the carrier's Xiaolingtong service in 12 provinces. The contract was one in a flurry of new contracts worth a total of \$2.3 billion that were announced in Washington at a January 13, 2004 ceremony co-organized by the Telecommunications Industry Association. The ceremony was part of a week-long US-China Seminar on Prospects for Cooperation in Telecom and IT in Washington DC, led

by China's Ministry of Information Industry (MII) Deputy Minister Lou Qinjian. Other companies that won contracts during this time were Motorola, Lucent Technologies and Ericsson. The deal was reported in articles by *Reuters*, *Dow Jones*, *Xinhua Financial Network*, *PR Newswire*, *RCR Wireless* and *AFX Asia*. The mean positive outlook measure was 3.63.

Rank	Deal ID	Positiv Score	Num. of articles	Brief description of deal
1	U-24	8.27	6	Reached agreement with Datang Telecom to develop equipment for 3G mobile network in China
2	U-22	5.91	4	Signed \$31.7m contract to supply China Telecom with IP-based PAS system in Jiangsu
3	U-25	5.13	5	Won \$32m contract to provide China Telecom with PAS equipment in Guangxi
	U-45	5.13	3	Won contract from China Netcom to deploy 100,000 ADSL broadband lines

Table 5.12: Top 3 UTStarcom deals ranked by positive outlook

With reference to table 5.12 above, the UTStarcom deal that garnered the highest positive counts was a November 2002 agreement with Datang Telecom to form a strategic partnership to jointly develop and promote the TD-SCDMA 3G standard. The partnership would provide a complete end-to-end solution using UTStarcom's IP-base core network. Between the six articles that reported on the deal, the agreement was positively characterized as "a precious development opportunity" and an "important partnership" that offered "greater operator flexibility." Datang was referred to as a "strong partner" and UTStarcom possessed "leading-edge technology." Both sides were "especially pleased" with the agreement that was a "significant development" and would produce "key system technology." Several articles quoted Ru'an Tang, Chief Operating Officer of Datang Mobile and Laqiang Teng, Senior Vice President of UTStarcom China.

The deal with the second highest positive outlook was a \$31.7 million contract to deploy IP-based PAS (personal access system) equipment to Jiangsu Telecom, a subsidiary of China Telecom. The deployments would take place in a new city and expansion deployments occur in several surrounding cities in the province. The deal was between UTStarcom, the "largest local loop provider in China" and China Telecom, the "largest fixed-line telecom carrier." The fixed-line business in December 2002 was described as "a profitable business" capable of "more revenue." Based on "much success" in previous quarters with PAS deployments based on "higher power base stations, wide variety of

handsets and value added services platform”, it was believed that UTStarcom’s systems were “more reliable and formidable.” Some articles quoted Johnny Chou, the Chief Operating Officer of UTStarcom China.

There were two deals that were tied for third based on most positive outlook rendered. The first of the two was a \$32 million expansion contract awarded by China Telecom for 8 district level cities in the Guangxi province. The deal came as one in “a spate of contracts” to supply PAS systems. It was reported that “the quickening pace of deployments” attest to “growing demand” and that the expansion would result in “advanced services” and “enhanced functionalities.” The five articles that reported on this deal were not lengthy and all but one were under two hundred words in length. Although the same two companies, UTStarcom and China Telecom were involved in this deal and the Jiangsu contract above, the articles did not characterize both companies as leaders in their sectors. UTStarcom China COO Johnny Chou was quoted in a few articles.

The other deal was a contract with China Netcom Corporation to deploy 100,000 IP-DSLAM broadband lines to ten “major cities” in three provinces. The deal was described as “a decisive move” in “emerging broadband markets.” The market potential for UTStarcom’s IP-DSLAM product line was characterized as “strong” and “extremely high.” Ying Wu, the president and chief executive office of UTStarcom China was quoted in a fraction of the articles as saying that the company is “the leader in IP-DSLAM deployments worldwide” and “enjoys significant first-mover advantage.”

Table 5.13 shows the top 3 Nortel deals when ranked according to the number of articles that reported on the particular deal.

Rank	Deal ID	Num. of articles	Brief description of deal
1	N-17	44	Awarded \$280m contract to upgrade China Unicom’s 2G network in 6 provinces
2	N-33	33	Nortel to spend \$200m over 3 years to do R&D in China
3	N-39	32	Reached agreement with Putian to jointly develop 3G mobile equipment

Table 5.13: Top 3 Nortel deals ranked by coverage

The Nortel business venture that was reported in the most number of articles was a \$280 million contract awarded by China Unicom to upgrade its existing second-generation (2G) CDMA network in 6 provinces as part of a second phase of development. The deal came on the eve of Chinese President Jiang Zemin’s visit to the U.S., and was part of a spate of contract awards by Unicom that totaled \$1.3 billion. Other companies that received contracts were Motorola, Lucent Technologies, Ericsson and ZTE Corp. The deal was reported in many newspaper journals such as *The Financial Times*, *Xinhua*

News Agency, Reuters, Dow Jones, The Wall Street Journal, The Asian Wall Street Journal, Total Telecom, Canada Stockwatch, The Toronto Star, Agence France-Presse, M2 Presswire, Communications Today. The positive outlook on the deal averaged 4.47.

The second most-highly covered deal was a September 2003 announcement by Nortel that it would invest \$200 million into its R&D department in mainland China over the next three years. The investment involved the signing of a memorandum of understanding on cooperation with the Beijing government to set up a Nortel Network campus in Beijing's Chao Yang District that will cover 55,000-square meters in the future. In addition, the number of employees at Nortel's Beijing R&D center would double to 800 by the end of 2003. The new campus and the existing R&D facilities in Beijing and Guangzhou would be dedicated to the development of IP-based voice and multimedia services, 3G wireless services, next generation networking, and other leading edge technology solutions. The deal was reported in publications such as *Xinhua News Agency, Reuters, Dow Jones, Associated Press, China Daily, Interfax China, The Canadian Press, Asia Pulse, M2 Presswire, Optical Networks Daily, and Telecom World Wire.* The average positive outlook for this deal was 3.97.

The third ranked deal was a memorandum of understanding (MOU) on strategic cooperation that was signed by Nortel and Beijing-based Putian Corporation. The two companies committed to jointly research, develop and manufacture TD-SCDMA and W-CDMA products. As a result of this June 2004 agreement, a team was formed to discuss how to establish a joint venture. The joint venture was subsequently announced in January 2005.¹¹ The MOU agreement was reported in news journals such as *Xinhua Financial Network, SinoCast China, South China Morning Post, Dow Jones, Reuters, Asia Pulse, Total Telecom* and *M2 Presswire.* The mean score in the Positiv category for this deal was 4.78.

Rank	Deal ID	Positiv score	Num. of articles	Brief description of deal
1	N-38	9.55	4	Awarded contract by Shenzhen Oil to deploy Enterprise Networking solutions
2	N-32	8.55	2	Signed agreements with China Telecom, China Unicom and China Mobile to extend warranties
3	N-21	6.88	17	Won contract to install optical long-haul networks

Table 5.14: Top 3 Nortel deals ranked by positive outlook

¹¹ The joint venture agreement announced on January 20, 2005 is considered a separate deal from the memorandum of understanding between both companies. Therefore, the article count of 32 does not include coverage of the joint venture deal.

Table 5.14 shows the 3 highest ranked Nortel deals when ranked by the percentage of words contained in all the articles reporting on the deal that have associated positive meanings. Among the Nortel deals in the database, the highest positive outlook was given to an agreement for Nortel Networks to deploy enterprise networking solutions for Shenzhen Oil Products Co (Shenzhen Oil), a sales branch of China Petroleum and Chemical Corp (SinoPec). Through “improved performance” and “enhanced reliability and security”, the deployment was expected to “maximize Shenzhen Oil’s network investment.” The deal brought together “the largest oil supplier in the [Shenzhen] region” and Nortel, an “industry leader.” The deployment involved Nortel’s Contivity IP (Internet Protocol) Services Gateways and Passport portfolio of multiservice switches, which enabled a “high-performance” local area network (LAN) with “secure connectivity” and “performance advantages.” Robert Mao, president and chief executive officer, Greater China, Nortel Networks was quoted in a few articles.

The second deal consisted of extended warranty agreements between Nortel and subsidiaries for China Telecom, China Unicom and China Mobile for a further year. The 24-hour network support includes remote technical support, hardware repair and return, and knowledge transfer services. The deal was perceived to enable the three companies to “maximize ... return on investment.” It bore testimony to Nortel’s “success” based on its “extensive experience.” The articles quoted Robert Mao and a Nortel spokesperson.

The third most positive deal was a contract awarded by China Netcom to deploy a national multiservice backbone network that would cover more than 110 major cities all around China. The deal was hailed as “a new beginning” for Netcom, a “leading” and “top Chinese service provider” and Nortel, the “global market share leader in multiservice switching.” The national backbone was expected to play “a key role” for Netcom to provide “abundant, high quality” services to “better satisfy customer demands.” Nortel’s Passport product portfolio was described in several articles and was characterize as “versatile”, “robust”, “reliable and scalable.” Robert Mao of Nortel and Leng Rongquan, vice president, China Netcom were quoted in several articles.

5.4 Summary

Having described the findings from the research study from the various stages in the methodology, it is important to recognize that the results offer insight into different aspects of deal-making in the telecom industry in China.

The general findings presented in the early portions of this chapter offer a lens through which the reader can view and analyze the flow of telecom business ventures in China in recent years. The selection of UTStarcom and Nortel in the research methodology allowed deeper insight about deals to be gleaned from the compiled deal-centric dataset. This dataset contained 902 business news articles that reported on 114 business deals and it presented noteworthy conclusions regarding the extent of coverage offered by leading publications in China business. Moreover, the plotting of the business ventures along

China's geographical dimensions revealed a concentration of deal activity in the eastern provinces.

The content and statistical analyses provided empirical evidence for the differences that exist in the dataset across 4 *General Inquirer* categories – *Positiv*, *Negativ*, *Means* and *Goal*. These categories captured the degree of positive and negative outlooks rendered to deals, as well as the statement of end-states and mechanisms to attain goals. Statistical analysis was performed along several dimensions such as company, period of the year, product line, and individual deals. Business ventures that received the most coverage by the business press were identified and described. Similarly, the deals that garnered the most positive outlooks were extracted and elaborated upon.

In the next chapter, these findings will be synthesized and interpreted to obtain answers to the questions that were first put forth in chapter two.

CHAPTER 6: Discussion

In the previous chapters, we have contextualized the research in the telecommunications industry in China. We have also presented the theory and hypothesis development, as well as the research methodology. The findings from the research were described in chapter 5. The aim of this chapter is to organize the various findings, synthesize the various thoughts that the findings throw up and to map them over the initial objectives that were put forth.

Section 6.1 presents a discussion of a number of aspects of investments deals. These aspects include deal reporting, deal flow, deal drivers, and investment scope, patterns and strategies. Section 6.2 then looks at the investment orientations that were first proposed in chapter 2. The section that follows discusses the institutional and policy influences that could result in the coming years.

6.1 Aspects of investment deals

The profile and pattern of deals that were collected for UTStarcom and Nortel Networks can be discussed along several dimensions. Each of the subsections that follow will tackle one such dimension.

6.1.1 Deal reporting

Consistent with what we had guessed at the beginning of the research, collecting information regarding business deals was a laborious process. We did not find any central registry of Sino-foreign investment contracts, partnerships, agreements and joint ventures. During the course of the research, we found two publications that reported regularly on business deals in China across several industries including telecommunications. The regular summaries of China business activities published in the *Economist Intelligence Unit* and the *China Business Review* were helpful and provided suggested frameworks to organize the various deal attributes that were present. For example, the EIU articles classified the business ventures into several deal types, such as supply contract, equipment contract, joint venture and partnership. Similarly, the CBR articles organized the deals into several categories such as “China’s Exports” and “Imports.”

However, we discovered that these major publications did not offer comprehensive coverage of all publicly-disclosed business deals. After we focused on UTStarcom and Nortel, we proceeded to do an exhaustive search of all deals that were made by the two companies during the three-year period ending 2004. This process involved taking the union of the two datasets of business deals from CBR and EIU articles, as well as other sources such as lists of business deals that were found in analyst reports for the companies. In addition, searches for business deals were made online in electronic news databases.

Overall, we found that the CBR reported on 50% or less of the deals for the two companies. The EIU fared slightly better by capturing less than 65% of the deals. This was alarming given the high standing of both publications in the trade and academic community. In particular, the limited coverage of the *China Business Review* is noteworthy because the trade publication has been cited and used in published international business research. However, our findings are based on two companies in the telecommunications industry. It is unclear whether the sparse coverage extends to other China industries that the EIU and CBR report on.

6.1.2 Deal flow

The deal counts that were made for the period 1997 to 2004 allowed us to make observations about the flow of business investments across time. We recognized that many events and reforms took place during this period of time and conclusions cannot be drawn simply based on the deal counts. However, the information still allows for interesting observations and inferences to be made.

For example, there were lower deal counts in quarter 4 of 2002 and quarter 1 of 2003, which could have been attributed to the unfolding Severe Acute Respiratory Syndrome (SARS) epidemic at that time. In addition, many analyst reports that were collected characterized the first quarter annually as a period of slower business because of Chinese New Year festivities in mainland China. In our data, there were some dips in first quarters but we did not find a consistent pattern across the 7 year period. Total deal count increased on average from 1998 onwards and this could reflect the positive response of foreign investment to market reforms and industry restructuring that was introduced in early 1998.

Perhaps the most notable trend is the increase in export contracts from China. Huawei Technologies and ZTE Corp. are the major recipients of these telecom infrastructure contracts from other countries. This provides evidence for the emergence of strong domestic champions in China that are slowly gaining visibility and legitimacy in international markets. It is also interesting to observe that the contracts are awarded by companies and governments in both developing *and* developed countries.

6.1.3 Deal drivers

From the analysis of the data collected for the thesis research, three drivers of business ventures were identified. These drivers were (1) market opportunities; (2) mimicry; and (3) political agenda.

First, many of the deals are driven by perceived or anticipated market opportunities. This stems from the large domestic market in China for telecommunication equipment. For example, many of the UTStarcom deals (e.g. U-1, U-4, U-18, U-31 to name a few) were for the expansion of PAS networks in order to prepare capacity for anticipated growth in demand. In the case of Nortel, several large contracts (e.g. N-34 worth \$139m) were won for the upgrading of existing second generation networks.

The research also showed the business deals for Nortel and UTStarcom were concentrated along the more prosperous east coast of China, where consumer purchasing power was higher relative to the inland provinces. This is indicative of the companies' strategies to go for consumer markets (Fung, Lau et al., 2004).

In addition, many industry players expect the MII to award 3G licenses in 2005. This will usher in a new season of 3G contracts that some have estimated to be worth more than RMB 500 billion (\$60 billion) (Interfax China, 2004). In anticipation of this, many multinational companies have made investments in preparation for the expected demand surge. For example, Nortel and Putian signed an agreement (N-39) to jointly develop and manufacture 3G equipment based on the home-grown TD-SCDMA technology standard. UTStarcom has established a joint venture with Panasonic to do the same. In addition, it has signed an agreement with Datang to develop system equipment for 3G mobile networks in China based on W-CDMA and TD-SCDMA.

The 3G agreements mentioned above can also be propelled by a second driver – mimicry. Other competitors of UTStarcom and Nortel have also engaged in similar preparatory moves in anticipation of an opening market and there is a possibility that mimicry exists in the industry where competing multinationals sign agreements that resemble the first-mover in the industry. In these cases, I postulate that the mimicry may be motivated by an acknowledgement of a competitor's sound strategy, or a fear of losing market share and missing opportunities of new growth.

The third driver is political agenda. In at least two of the deals in the deals-centric dataset, there was a clear political intent behind the business agreements. The \$280 million contract (N-17) awarded by China Unicom to Nortel in October 2002 was part of a spate of contract awards totaling \$1.2 billion in value. The flurry of deals came on the eve of Chinese Premier Jiang Zemin's visit to the United States, which include a summit with President George W. Bush. *The Asian Wall Street Journal* carried a front page article that characterized the "Chinese shopping spree" as "part of a broader effort to set a good atmosphere" ahead of the summit, and was specifically aimed at "soothing Washington's concerns about its soaring trade deficit with China", which stood at \$10.9 billion in August 2002 (Pottinger, 2002a). In addition, *The Wall Street Journal* noted that the summit came two weeks before a Communist Party meeting that would usher in a new generation of China leaders (Pottinger, 2002b). President Jiang was reportedly seeking to maintain his influence in the Party and a successful U.S. trip would be advantageous to the Chinese Premier. It is also noteworthy that the *Xinhua News Agency* carried a report of the Nortel deal in its English edition, which speaks of a desired visibility for the agreements signed. In the research dataset, such coverage from *Xinhua* was not common among all the deals.

Another business agreement that had similar political overtones was a January 2004 China Telecom contract (U-57) worth \$200 million that was awarded to UTStarcom. The contract was announced with others during a ceremony that was part of a week-long US-China Seminar on Prospects for Cooperation in Telecom and IT in Washington DC, led by China's Ministry of Information Industry Deputy Minister Lou Qinjian. The total

value of the contracts announced overnight was \$2.3 billion. The seminar was set against the backdrop of Washington concerns about America's growing trade deficit with China. A month prior to the seminar, the U.S. Trade Representative sent Congress a report contending that China had failed to implement market-opening reforms required by the World Trade Organization (USTR, 2003). The state-owned Xinhua News Agency described the contracts as "part of an attempt by China to show it is buying American goods and earnestly addressing complaints from Washington about the size of its trade deficit with China, which is expected to have soared to 130 bln USD in 2003 from 102 bln in 2002" (Xinhua, 2004).

6.1.4 Deal scope, pattern and strategy

Many observations about the set of business deals compiled are related to elements of scope, pattern and strategy. First, it was observed that for the same three-year period, UTStarcom participated in more deals than Nortel, but the scope and coverage of deals were relatively smaller. Indeed, UTStarcom's 73 deals was almost double that of Nortel's 40. However, many of the 73 business ventures were very localized, where many deals pertained to one or two provinces. These observations did not characterize the Nortel deals to as large of an extent. In addition, the scopes of the contracts signed by UTStarcom were typically very focused and extremely explicit in terms of deal value, the customer and the location where the telecom equipment was to be deployed. All of UTStarcom's contracts were from either of the fixed-line service providers, China Telecom or China Netcom. In contrast, the Nortel deals were usually less explicit in those same details and were generally more "wholesale" or broader in scope. This scope was also manifested in the clientele of both companies. UTStarcom's contracts were confined to China Telecom and China Netcom. In contrast, Nortel's contracts were awarded by China Telecom, China Netcom, China Unicom, China Mobile and other organizations or companies such as SINOPEC.

This contrast between a specific, localized scope versus a broad, wholesale scope could possibly account for the relatively sparser coverage of the UTStarcom business deals by the business press, where the maximum coverage for a deal was 17 articles. In the case of Nortel, this maximum was 44 articles.

The observed characteristics of the business deals struck by the companies reveal underlying strategies. In the case of UTStarcom, the large number of highly localized deals reflects a piecemeal sales strategy where deals are made in small amounts at a time. On the other hand, Nortel demonstrates no such pattern.

In fact, UTStarcom pursues a direct sales and marketing strategy in China, targeting sales to individual telecommunications bureaus and to manufacturers or equipment distributors with closely associated customers (UTStarcom, 2004). In China, the telecommunications bureaus are organized at provincial and metropolitan levels. UTStarcom therefore targets individual provinces or cities and sells directly to the bureaus and manufacturers there. After each deal is agreed upon and a new deployment contract is signed, the company then seeks to sign expansion contracts in the same area or to replicate successful deployments through new contracts in other cities or provinces. An example is the U-30

deal between China Telecom and UTStarcom in Hubei. The contract was for a new IP-based PAS deployment in Wuhan, the capital city of Hubei province. Simon Le, Senior Vice President of UTStarcom China was quoted as saying, "UTStarcom is confident that this new iPAS system will repeat the same success it has achieved in another provincial capital, Chengdu" (PRNewswire, 2003). Chengdu is the capital city of Sichuan province and has a similar population size to Wuhan. At the time when the Hubei contract was signed, Chengdu had undergone two iPAS system expansions.

I postulate that this difference in scope and underlying strategy could be accounted for by two reasons. The first reason is experience in the market and the business relationships that are in place. Nortel has been in the Chinese market for over 30 years, while UTStarcom has only been a player since 1999. Therefore, it is logical to deduce that if we assume time to be correlated to market familiarity and the fostering of relationships, then UTStarcom could have weaker and less business relationships compared to Nortel. As a result, there is a need for the former to build relationships from the city and provincial levels up. Nortel on the other hand, has the means and relationships to cut deals that are broader in scope. Such deals require coordination across different provincial jurisdictions and consequently either need agreements with several individual provincial bodies or need the ear of more senior decision-makers who oversee or have influence over several areas. Nortel's deal to extend warranties with China Telecom, China Unicom and China Mobile (N-32) provides evidence that sustained, long-term relationships are well-regarded. The deal garnered the second highest value in terms of positive outlook in our research dataset.

The second possible reason that accounts for localized versus broad scope and strategy is the nature of the products that both companies sell. UTStarcom's main product is its PAS and iPAS systems and handsets. The PAS or Xiaolingtong system is based on microcellular technology that enables wireless extension to wired phone services. A PAS handset serves as a mobile phone, but within a local calling region, usually a metropolitan area. Since the nature of the product is rooted in localization, this nature can be carried over to the PAS deals so that they are characterized by localization as well. In contrast, Nortel's main products in China are its Optera optical long haul fibers and its Passport multiservice switches. Both products cater to high-capacity, long-distance, large network needs. Specifically, Optera is a connection solution that links two or more places together. Bearing these product characteristics in mind, it does not then come as a surprise that Nortel's deals are broader and not as localized relative to those of UTStarcom.

In addition, UTStarcom's product offerings are limited compared to Nortel's. Consequently, its main customers are the fixed-line service providers in the telecom market. In contrast, Nortel boasts competencies in wireless and wireline technologies, which enable it to strike business deals with China Telecom and China Netcom, as well as China Mobile, China Unicom and other players such as SINOPEC and the Agricultural Bank of China.

6.1.5 Hypotheses revisited

From the thesis research that was conducted, it was clear that the business deals differed significantly along a variety of objective and subjective dimensions.

Several objective deal attributes were found. These included date of agreement, participants, deal type, deal value, geographical location and product line. The description of the findings in the previous chapter serves to present convincing evidence that even within a small subsample of two telecom companies, the 74 UTStarcom and 40 Nortel business deals presented a spectrum of values along these objective attributes.

In addition, the collected business deals were analyzed based on subjective and evaluative dimensions such as degrees of positive and negative outlook, both of which capture expected outcomes of the deals. In our research, it was found that the business ventures exhibited statistically significant differences in these evaluative dimensions, when compared across companies, time period, product line and individual deals.

Therefore, based on these findings, we have proven the first and second hypotheses that were put forth in chapter 2 to be true. The conclusions C1 and C2 read:

C1: Significant differences exist between the objective attributes of Sino-foreign business deals that occur in the technology markets in China.

C2: Significant differences exist between the expected outcomes of Sino-foreign business deals that take place in the technology markets in China.

6.2 Investment orientations

Based on our findings from the research, we now revisit the hypotheses put forth in chapter 2. We had proposed three different investment orientations and had posed the questions of which one or more of these orientations were exhibited by multinational companies in their telecommunications ventures in China.

The first investment orientation was characterized by a goal to lower factors of production, such as issues related to cost, capacity, expertise and quality. Both UTStarcom and Nortel exhibit such an orientation.

Over the recent years, UTStarcom has established an extensive administrative, research and development, manufacturing, sales and support infrastructure in China, which have been deemed to be critical to the company's success within and outside China (UTStarcom, 2004). In addition, the low-cost research and development and manufacturing capabilities in China allow it to be competitive on a cost and pricing basis for its products. The Hangzhou manufacturing facility in the Chinese province of Zhejiang is responsible for the manufacture and final assembly and testing of the company's mSwitch, PAS equipment and AN-2000 wireline equipment. The company is dedicated to expanding its presence in China by "utilizing China's low cost

manufacturing and research and development capabilities to further improve efficiencies in [their] manufacturing and research and development processes” (UTStarcom, 2004). Moreover, the company “believe[s] that ... infrastructure, cost efficiencies and research and development advances in China provide a significant platform and strategic advantage for ... global success” (UTStarcom, 2005).

Nortel has also sought to make use of the lower factors of production in China. In particular, the Canadian company has focused more heavily on its research and development personnel in China rather than its manufacturing capabilities. As a technology flagship, Nortel Networks focuses more on technological innovation, as opposed to manufacturing. During one of his visits to China, then Nortel president and chief executive officer Frank Dunn expressed astonishment at the pace of innovation and development in China. He added that “China ... has many telecom talents at a world level and they contributed a lot to Nortel’s global technology leadership” and that by establishing R&D laboratories in Beijing and Guangzhou, Nortel would further tap Chinese innovative and creative talents (Hou, 2002). In addition, Frank Dunn was quoted as saying “China is extremely important to Nortel Networks, both as a market and a source for technology talent” (Xinhua, 2003). In a more recent interview with *People’s Daily* of China, current president William Owens singled out Nortel’s R&D personnel in China for praise, pointing out that they were “very wise and ... devoted to their work” and “can do the world’s first-rate R&D work” that can be used not only in China, but also in other markets (People’s Daily, 2004). The article also reported on Nortel’s plans to invest \$200 million to strengthen its R&D force in China (N-33).

The second investment orientation is to establish a market footprint in the Chinese market because the domestic market is so large in potential. Once again, both companies exhibit such an orientation.

The collection of deals for both companies, which are presented in Appendix C exhibit the large demand that is present in China. A large majority of the deals comprises of contracts with the 4 big state-owned China service providers – China Telecom, China Netcom, China Unicom and China Mobile.

In its mandatory Form 10-K filing with the United States Securities and Exchange Commission, UTStarcom states its clear belief that the company intends to leverage its presence in China and believes that the Chinese market still holds untapped business opportunities by virtue of its large population and low teledensity (UTStarcom, 2005). The large monetary value of its contracts in sum during the three year period also attests to the size of the Chinese market.

In addition, for a company such as UTStarcom with annual revenues over \$2.7 billion in 2004, 79% of its revenues in 2004 came from China. This proportion was 86% and 84% in 2003 and 2002 respectively (UTStarcom, 2005).

Nortel also recognizes the lucrative potential of the China market. In the aforementioned quote by Frank Dunn of Nortel, the former president and CEO acknowledged China's extreme value to Nortel as a market. In addition, Robert Mao, president of Nortel, Greater China has been quoted as saying, "[t]he market keeps growing in both sheer numbers and in demand for more sophisticated applications" (Reuters News, 2003).

This investment orientation is revealed to a great degree in the strategic alliances and partnerships that have been established to develop 3G equipment based on the home-grown Time Division-Synchronous Code Division Multiple Access (TD-SCDMA) standard. TD-SCDMA is a 3G standard that was developed by Datang Telecom of China and Siemens AG of Germany. The standard is recognized as a third-generation standard, together with CDMA2000 and W-CDMA. TD-SCDMA is owned by state-owned Datang Telecom.

Currently, TD-SCDMA is a standard unique to the China market and 3G products that support this standard will first be deployed in China. In other countries, initial deployments will be or have been based on CDMA2000 or W-CDMA. Despite the singular application of TD-SCDMA to China only, many telecom companies have invested into research and development in this area. UTStarcom has signed agreements with Datang Telecom (U-24) and Panasonic (U-53) in two separate deals that both pledge to the joint development of 3G products based on TD-SCDMA. Nortel has also partnered up with Putian Corp. (deal N-39) to do likewise. Other companies have agreed on similar deals – Siemens has allied with Huawei Technologies, Alcatel with Datang, while Motorola, Lucent, Samsung and Nokia have also struck partnerships with domestic companies. These deals reveal intent on the part of these companies to prepare for the deployment of 3G networks *just* in China. If TD-SCDMA was not deployed in China but instead another country that represented a smaller market, it is difficult to imagine that similar efforts would be made across the board by so many telecom equipment manufacturers.

In the third and final proposed investment orientation, foreign companies partner with Chinese domestic companies to develop products for international markets outside of China. Nortel has embarked on deals that reflect such an investment posture while UTStarcom has not demonstrated it.

The Nortel-Putian agreement (N-39) to develop TD-SCDMA and W-CDMA products embodied elements of this investment orientation. W-CDMA is the dominant 3G standard in Europe and the joint efforts of the two companies will enable them to research, manufacture, and develop products that can be sold to European markets. Xing Wei, president of China Putian was quoted as saying, "the cooperation with Nortel Networks will be an important step towards internationalization for Putian's 3G industry" (RCR, 2004). Echoing a similar sentiment in a separate interview pertaining to the \$200 million R&D announcement (N-33), then Nortel CEO Frank Dunn was reported as saying "we expect to continue to leverage the technology and innovation we develop in China by deploying it in the global marketplace" (Norris, 2003)

UTStarcom has embarked on a fairly similar strategy except that it has partnered another foreign company, instead of a Chinese company to base joint operations in China in order to develop products for the Chinese and global market. The deal that is referred to here is the joint venture agreement (U-53) with Japan's Panasonic Mobile Communications. Both companies committed to jointly research, develop and manufacture 3G products that could operate on the TD-SCDMA and the W-CDMA standards.

Based on our study of UTStarcom and Nortel, we find reason to arrive at our third conclusion (C3) which is stated as follows:

C3: Foreign companies exhibit one or more of the three proposed investment orientations in their business in China.

6.3 Institutional and policy influences

Having discussed our findings in the framework of investment orientations, deal drivers and strategic patterns of deals, we proceed to address the institutional and policy factors that have influenced and will continue to direct the shape of the investment landscape in the coming years.

When set within a technology and policy framework, China presents an interesting case because Chinese state policy drives and determines change. This is because to a large extent, technological development and change is heavily influenced and directed by State government directives and policies. As described in chapter 3, the State Council has the power to determine which operators, technologies and infrastructure exist in China's telecoms market. For example, the State Council issues five-year plans regularly to direct the development of the country's economy in various industries. Currently, China is at the end of its tenth five-year plan for the period 2001 to 2005.

Mueller and Tan (1997) have noted that China's leadership has based its legitimacy on economic growth. Growth that occurs in the context of an increasingly multinational, competitive, and information-intensive economy leads to reform and decentralization at home, irreversible engagement with the rest of the world, and transformation of information and communication into strategic commodities. All of these things combine to make the telecommunications sector the site of intense bureaucratic struggle and foreign pressure.

Such tension between stakeholders in the China telecom industry sets up a climate of uncertainty in the sector which can deter investments by foreign telecommunication companies. In addition, concerns about regulatory commitments can dampen an enterprise's willingness to undertake significant investments to reduce cost. For instance, China's present legal system is evolving and its regulatory agency has limited independence, which can lead to a weak ability to make commitment (Yu, Berg et al., 2004). As an illustration, when China began opening its closely guarded telecom

services sector on December 9, 2004 by allowing foreign entry into its fixed-line market for the first time, response from foreign telecom companies was dismal. *The Wall Street Journal* reported that only one foreign operator had applied for a basic telecom license in China (Buckman, 2004). The article accounted for the lack of enthusiasm by pointing to invisible barriers that currently exist, such as confusing regulations, government meddling and high costs to market entry.

In the foreseeable future, there exist a number of possible state-led institutional and policy changes that could pose significant risks to the business of telecom companies in China¹². Consequently, such changes will also greatly influence the deal-making patterns and investment orientations of foreign telecom companies in the Chinese marketplace.

a) *The promulgation of new laws and regulations and the interpretation of those laws and regulations*

Many foreign multinationals conduct business in China through wholly foreign owned subsidiaries or joint ventures with local partners. These operations are subjected to Chinese laws and regulations that pertain to foreign investment in China. In recent years, many new laws have been created and according to government filings by UTStarcom (2005), these are not always published in time or at all. Hence, multinational companies may be operating in violation of statutes without adequate foreknowledge. In addition, the Chinese legal system is based on written laws and prior court decisions hold little value in setting precedents. Moreover, the interpretation and enforcement of statutes by the judiciary system may not always be consistent. According to a U.S. Trade Representative report to Congress, “many U.S. companies in 2004 continued to express serious concern about the independence of China’s judiciary” (USTR, 2004). Based on their experience and observations, Chinese judges were often influenced by political, government or business pressures, particularly outside of China’s big cities.

However, there have been encouraging developments in the legal circles. For example, in 1999, the Supreme People’s Court introduced requirements for judges to be appointed based on merit and educational background and experience, as opposed to through politics or favoritism. In addition, it has been noted that the Chinese legal system is making progress in terms of transparency, with ministries and agencies having a good record in making new or revised laws and regulations available to the public in Chinese for comment (USTR, 2004).

There have been numerous efforts to craft a Telecommunications Law in China over the last 25 years (Chen, 2004) and a draft was recently submitted to the State Council. If passed, the law will lay down the basic legal framework for the industry and will address issues such as market access and universal service obligations. Uncertainties remain with regards to the final wording of the Telecoms Law, the method of enforcement and the interpretation of this law.

¹² These risk-bearing changes are identified in the 10-K government filing made by UTStarcom in 2005 (UTStarcom, 2005). The author has added further elaborations and supporting evidence for the risks that such changes have brought or can potentially bring.

b) the inconsistent enforcement and application of the telecommunications industry's rules and regulations by the Chinese government between foreign and domestic companies

In the form of the MII, China does not have an independent regulatory agency in a real sense because it is difficult of the MII to be an independent regulator without any political obligation and political intervention (Fan, 2005). Given the possible influence of political interests in favor of domestic telecom companies, there is scope for inconsistent regulatory treatment of domestic and foreign companies. Smith Gillespie (2001) argued that the Chinese government's influence in establishing favorable market conditions for domestic firms is evident in how it manipulates the creation of new markets and the setting of technical standards. By way of an example, he highlighted that one of the factors influencing the timing of CDMA implementation by mobile telecom carriers is the extent to which domestic firms have the capability to product CDMA systems. To this end, with respect to technical standards, informal government policies are designed to give domestic firms an inside track on the development of specific communications standards. Given that foreign companies need time to adapt their products to Chinese standards, this gives Chinese firms an edge on the competition (Smith-Gillespie, 2001).

c) the restructuring of telecommunications carriers in China

The restructuring of any of the 6 telecom carriers, which are all state-owned, in China represents disruptive changes that introduce uncertainty and risks for investing companies. An example is the November 1, 2004, decision by the SASAC to swap the senior executives of China Mobile, China Unicom, and China Telecom in a bid to ease competition among carriers. Dubbed "a first for international capital markets" and "one of the most baffling and misguided moves ever seen among publicly listed groups", the reshuffle served as "a powerful reminder that the three companies only answer to one shareholder" – the Chinese government (Guerrera, 2004). The move resulted in business interruption between China Telecom and China Netcom, which had the adverse impacts of delaying revenue recognition in the fourth quarter of 2004 (UTStarcom, 2005). More recently, the Chinese government has been reported by the *China Daily* to be considering another reshuffle that would see first, China Unicom merge its GSM cellular network with China Netcom; second, China Telecom buy Unicom's underused CDMA network (Li, 2005). The impacts of such a decision on revenues are uncertain.

d) the introduction of measures to control inflation or stimulate growth

In the past, China's government has implemented policies intermittently to increase or limit the rate of economic growth, control periods of inflation or otherwise regulate economic expansion (UTStarcom, 2005). For example, China's first interest rate increase in nine years took place in October 2004 and it was attributed to inflation hitting a seven-year high of 5.3% in the year through July and August (Reuters, 2004). The changes in interest rates can result in significant effects on company statements and business performance and payments.

e) the introduction of new guidelines for tariffs and service rates, which affect the ability of companies to competitively price products and services

The November 2000 MII announcement of significant changes in telephone rates in China provides an example of disruptive new rules. While long distance, international, leased line and Internet connection fees were cut by up to 70%, the per minute rates for local telephone services, which includes certain types of wireless access services were increased from approximately \$0.01 to about \$0.02 (UTStarcom, 2001). The changes introduced uncertainty and unanticipated risks, since the increase in the local rates arguably affected demand for foreign equipment providers.

f) changes in the rate or method of taxation

The Chinese government is currently considering implementing a new unified tax code which would eliminate the preferential tax treatment that foreign multinational companies have enjoyed over domestic firms. The move is motivated by China's obligations to adhere to WTO guidelines as part of its WTO entry agreements. Although the introduction of such tax reforms has been repeatedly delayed, there have been recent reports quoting Ministry of Finance officials as saying that the new unified code will be implemented by 2006 (Xinhua, 2005). According to figures published by the Chinese Academy of Social Sciences (CASS), many foreign companies currently pay an average 13% in corporate income tax, while domestic firms pay an average 25% (EIU, 2005). Tax holidays for newly established foreign-invested enterprises (FIEs) and preferential tax rates for location in Special Economic Zones will also be abolished. The exact implementation of the impending tax reform is unclear and its possible impacts present uncertainty to foreign companies that conduct business in China.

g) the imposition of additional restrictions on currency conversion and remittances abroad

The Chinese government imposes restrictions on the convertibility of the Renminbi into other foreign currency and in some case, the remittance of currency out of China. Any changes made by the State Council to impose limits on current account convertibility or other restrictions could have adverse effects on multinational companies. For example, Chinese currency controls restricting Renminbi conversion can constrain a multinational company's ability to engage in currency hedging activities in China (UTStarcom, 2005), thereby undermining risk-shielding measures. In addition, shortages in the availability of foreign currency can restrict the ability of Chinese subsidiaries to obtain and remit adequate foreign currency to pay dividends to parent companies outside of China, or otherwise to fulfill their foreign currency denominated obligations such as payments for components and technology licensing fees to foreign parent companies (UTStarcom, 2001). Under present foreign exchange laws, Renminbi held by Chinese subsidiaries of foreign companies can be converted into foreign currencies and remitted out of China to pay current account items such as payments to suppliers for imports, labor services, payment of interest on foreign exchange loans and distributions of dividends. This ability

to convert and remit is dependent on whether the subsidiaries have sufficient amounts of Renminbi to purchase the foreign currency.

h) any actions that limit the ability of companies to develop, manufacture, import or sell products in China, or to finance and operate business in China

This final risk-bearing change is an important one to take note of in the context of China. Historically, such actions have taken place. For example, in June 2000, the Ministry of Information Industry issued an internal notice that marked the conclusion of a review of PHS-based equipment in China. UTStarcom's then existing PAS system was allowed to exist in county-level cities and counties. However, new citywide deployments of PAS systems were not allowed. In addition, new rules were introduced, requiring the company to apply and obtain a network access license for its PAS system. By the end of the first quarter of 2001, the company had submitted its application for a network access license. As of the first quarter of 2005, UTStarcom has not been issued a permanent network access license. Based upon conversations with the MII, the company has come to understand that the PAS systems and handsets, which have been in the Chinese market since 1999, are considered to still be in the trial period. Trial licenses have been issued so that sales of these products can continue but license will ultimately be required. The regulations implementing the license requirements are not very detailed, have not been applied by a court and may be interpreted and enforced by regulatory authorities in a number of different ways that may differ from a legal counsel's interpretation (UTStarcom, 2005).

Looking into the future, there is reason to believe that the Chinese government will continue to explore ways to limit the abilities of foreign companies to do business in order to confer advantages to domestic companies. For example, China attempted in December 2003 to establish its own wireless local area networks (WLAN) standard named Wired Authentication and Privacy Infrastructure (WAPI) for use in all wireless computing devices that would be used in China. WAPI was a home-grown standard, not used anywhere else, which competed directly against the prevalent and internationally accepted Wi-Fi standard. Beijing announced that it would require all WLAN gear sold in China to incorporate the locally designed data encryption technology. To conform to the standard, foreign equipment vendors would have to license WAPI through a manufacturing agreement with one of 11 Chinese companies designated by the Chinese government. These companies included Legend Group Ltd. and Huawei Technologies Co. Ltd. The local Chinese companies, many of which are competitors of the foreign equipment vendors, were not obligated to license WAPI to the foreign companies. This naturally threatened to shut out foreign companies if they could not reach an agreement with a local partner.

The Asian Wall Street Journal reported that the announcement raised fears among foreign equipment vendors that they would lose intellectual property or be subject to deliberate delays that would allow domestic competitors early mover advantages (Chen, 2003). The move was also seen as the first of many similar decisions by the Chinese government to

use locally developed standards for 3G mobile phones, DVDs, electronic-imaging technology for mobile phones and for the digital home.

China's WAPI announcement irked equipment giants such as Cisco and Intel. The latter, the world's largest chip maker, declared three months later that it would not develop applications based on the Chinese encryption standard. Its hard line stance eventually convinced the Chinese government to rethink its policy and to finally postpone the implementation of the WAPI standard indefinitely.

This example provides a clear illustration of China's ambition to adopt its own home-grown standards in order to boost the development of its own domestic companies and to hinder the business opportunities of foreign players in the Chinese marketplace. The Chinese 3G standard, TD-SCDMA is an unfolding case study along those lines. In contrast to the WAPI case, foreign equipment vendors in the mobile telecommunications sector have positioned themselves in strategic partnerships with local companies. This hedges them against the risks that an announcement advocating TD-SCDMA as a sole 3G standard in China would bring.

This final risk-bearing change holds significant policy implications in and of itself. From a corporate policy perspective, a foreign company needs to ensure that flexibility and learning are a part of its organizational climate so that it is well equipped to adapt to and tackle the myriad of possible future developments in the Chinese market. From a public policy perspective, as market drivers emerge and grow stronger, the Chinese government can be expected to be very cautious about pacing changes and entry into the 3G market. Already, there have been numerous delays in the announcements of 3G license distributions. However, China must make a firm decision in this regard soon because of its strong desire to have 3G technology ready in time for the 2008 Beijing Olympics. Factoring the 2 or 3 years that it would take to conduct comprehensive trials and make adjustments, many industry analysts expect the State to award the 3G licenses by the end of 2005. This would herald the start of a series of lucrative contracts awards to build 3G infrastructure and the competition among foreign and domestic telecom equipment vendors promises to be intense.

6.4 Summary

In this chapter, we discussed various aspects of business deals, the investment orientations that foreign companies exhibit, and the institutional and policy influences that are present in the Chinese telecommunications market.

We observed that the sparse coverage of leading publications in international business add difficulties to the compilation of deal information. Interesting observations and inference were made regarding deal flow, the most important of which was the growing number of contracts that were awarded to Chinese telecom companies. Based on the research findings, we identified three drivers of business investment in the Chinese

telecommunications sector. Also, a discussion was presented about investment scope, patterns and strategies.

In addition, we revisited the three proposed investment orientations from chapter 2 – cost-minimization, market-driven and joint development. Based on the findings obtained from the UTStarcom and Nortel deals and deal reports, we find evidence to believe that the two companies exhibit one or more of the investment orientations.

The discussions concluded with a section that described 8 risk-bearing changes that could possibly take place in the coming years that would influence the investment orientations and deal activities of foreign companies. The discourse in this section was framed within the Chinese political environment where institutional and policy decisions determine and dictate changes in technology and business development.

CHAPTER 7: Critique, Future Research and Conclusions

This chapter closes out this thesis report by first offering a critique of the research in section 7.1. Following that, we make recommendations for possible avenues of future research. Finally, section 7.3 will present the summarized conclusions of this research study.

7.1 Critique

Having completed the research and obtained findings using the methodology that we developed, we now look back and critique the research.

Firstly, it must be noted that the research is based on the set of publicly-disclosed Sino-foreign deals in telecommunications. Business ventures that take place under the surface of public disclosure are not considered in this study. In addition, despite our efforts to conduct an exhaustive search, all business deals conducted by UTStarcom and Nortel in China might not have been identified. In other words, for the period 2002 to 2004, there might be more than 74 and 40 business deals that UTStarcom and Nortel conducted in China respectively.

Secondly, in the construction of the deals-centric dataset, business articles that reported on individual deals were identified and collected. This process was done manually in our research study. As a result, elements of subjectivity could be introduced. For example, judgment calls had to be made regarding whether a business article made mention of particular investment deal. Moreover, the human-based process was error-prone and this could introduce inaccuracies in the data collected. In this regard, the research could be improved by coding a software parser that could perform standardized and automated identification of business news articles that reported on a particular deal. The parser would take deal identifiers such as participants and date of agreement as its inputs. This improvement would lower the susceptibility of the data to human error and subjectivity.

Next, the research findings were based on a small sub sample of two case companies – UTStarcom Inc. and Nortel Networks Corp. – in the larger set of all foreign telecommunications companies that have operations in China. This limitation was imposed on the research due to practical considerations of time and human resources that were at our disposal. With the development of the software parser above, this limitation could be overcome and more companies could be studied.

Lastly, the content in the business news articles that were collected was reported in the English language. News sources in Factiva were also largely written to cater to an international readership. Given that the investments could place in mainland China, significant differences in expected outcomes could be found if the research was based on content that was reported in the Chinese language. However, we do not currently know of any content analysis packages for the Chinese language.

7.2 Future Research

A myriad of future research opportunities exist based on this thesis research. The work done here can be likened to pushing a small amount of material down the pipeline through to the very end. The pipeline or methodology has been established and tested such that areas of improvements have been identified. Based on the work that has been done in this research, a lot more materials can be channeled through the new pipeline and the pipeline can also be expanded to accommodate a broader range of materials.

The scope of the research could be expanded in a number of ways. Similar research could be performed to study telecommunications business venturing in other developing or emerging countries. The results could then be compared with the findings for China to identify similarities and differences and the factors accounting for them. Another possibility would be to expand the scope of the study to include other Chinese technology markets such as computing and electronic storage. Other industries in China such as automotive or aerospace could be investigated and contrasted against the telecommunications sector. The CBR and EIU articles that reported on telecom business deals in China also carry reports of investments activities in other industries. They could serve as useful starting points for parallel research in other industries.

Further work can also be done within the existing research scope. The *General Inquirer* is a powerful content analysis tool and many of its functions and capabilities were not employed in this thesis research. For example, users can build their own custom dictionary of words and perform word counts in input text based on these customer dictionaries. Such a methodology has been employed in content analysis research. For instance, Kothari and Short (2004) developed six content dictionaries that identified different categories of risk that companies in the pharmaceutical, telecommunications, financial and technology industries contend with. Therefore, such dictionaries could be developed and customized to capture risks that pertain to the Chinese investment landscape.

Moreover, one could focus primarily on one aspect of findings from this research, such as the 3G alliances. Instead of organizing business deal collection primarily around companies, one could organize it around 3G technology. Hence, one could collect information regarding all the Sino-foreign deals related to 3G technology and perform analysis and research that would produce findings that pertain specifically to 3G in China.

7.3 Conclusions

The goal of the project was to identify and analyze patterns of business deal-making and strategies that motivate technology deals in mainland China, by matching objective data attributes of deals with subjective, evaluative data on strategies and expected significance

For this sequential and synthesized research study, a new and novel research methodology was developed to comprise data collection to form three databases, content analysis and statistical analysis. The three databases were (1) a database of Sino-foreign telecommunications business deals from 2002 to 2004; (2) a disclosure database that comprised business news articles, analyst reports and government filings pertaining to the two case companies – UTStarcom Inc. and Nortel Networks Corp.; (3) an integrated deals-centric dataset that comprised 902 business news articles that reported on 114 specific deals by the two companies. This methodology was successfully implemented in this research study.

We proposed three hypotheses regarding objective and subjective deal attributes, as well as investment orientations. Based on the research findings, we arrived at three conclusion statements.

C1: Significant differences exist between the objective attributes of Sino-foreign business deals that occur in the technology markets in China.

It was found that a variety of objective deal attributes exist to define and differentiate business deals. These attributes included time of agreement, deal participants, deal value, geographical location and product line. Significant differences existed along these attributes for the 114 deals in the database.

C2: Significant differences exist between the expected outcomes of Sino-foreign business deals that take place in the technology markets in China.

Content analysis using the *General Inquirer* (GI) software was performed on the articles collected in the deals-centric dataset. Counts of words in four GI dictionary categories representing expected outcomes and goal statements were recorded. The proxy measure for deal importance was taken to be the number of business articles that reported on the specific deal. In addition, the proxy measure for expected outcomes was the word counts in the *Positiv* and *Negativ* GI dictionary categories. Based on statistical analysis, statistically significant differences were found across companies, time period, product line and individual deals.

C3: Foreign companies exhibit one or more of the three proposed investment orientations in their business in China.

On the basis of the data collected regarding deals and disclosure reports, we found evidence to show that UTStarcom and Nortel demonstrated more than one of the proposed investment orientations. Both companies exhibited cost-minimization and market-driven orientations. The Nortel-Putian strategic alliance deal reflected the third joint development orientation. UTStarcom showed this to an extent by partnering with Panasonic. The latter is not a domestic Chinese company and so the deal did not satisfy the definition of the joint development orientation.

In addition to the hypothesis testing, a number of inferences and conclusions were made. We observed that there is sparse reporting of China business deals in telecommunications in leading publications in international business that have been used for academic research in existing publications. It was found that the *China Business Review* and the *Economist Intelligence Unit* reported less than 51% and 65% of business deals for UTStarcom and Nortel.

Also, interesting observations and inference were made regarding deal flow, the most important of which was the growing number of contracts that were awarded to Chinese telecom companies. Based on the research findings, we identified three drivers of business investment in the Chinese telecommunications sector – market opportunities, mimicry and political agenda.

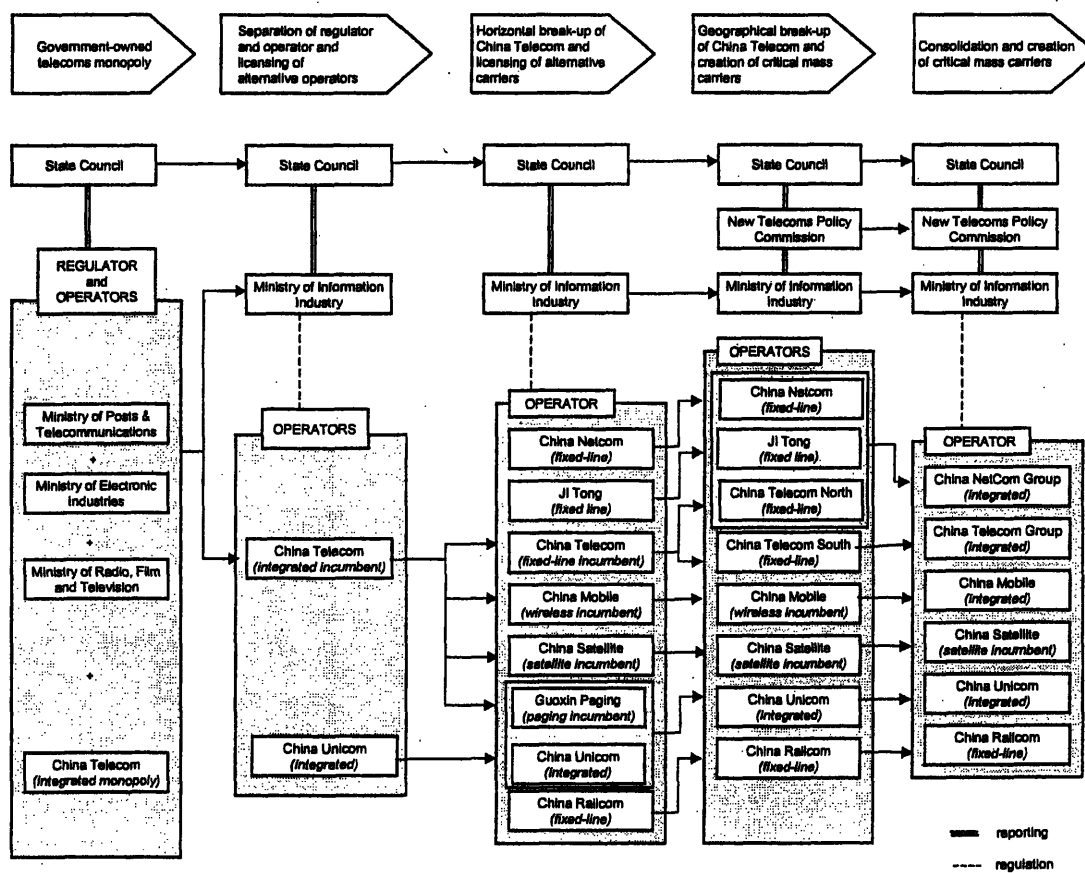
Consistent with findings in Zhang et al (2004), we found that strategic motivation is a factor in effecting structural change to FDI in China over time. The underlying strategies adopted by UTStarcom and Nortel resulted in different investment patterns for both companies.

The institutional and policy influences on investment orientation and strategies were described extensively. This was significant in the context of China's planned economy because of policy-driven change in the technology and business environments in the country. We identified and elaborated on 8 risk-bearing changes that could take place in the coming years and impact the investment patterns of foreign telecommunication companies.

APPENDICES

Appendix A: Telecoms Sector Restructuring in China

CHART OF THE RESTRUCTURING OF CHINA'S TELECOMMUNICATIONS SECTOR



Source: Guan, 2003, pp.175



Appendix B: The General Inquirer

This appendix presents an overview of the *General Inquirer* content analysis software. The section is organized into three parts: appendix B1 describes the software and discusses the software output that was obtained by running the *General Inquirer* on two sample articles that are found in appendices B2 and B3.

B1: Overview¹³

Developed by Stone and colleagues in the early 1960s, the *General Inquirer* (GI) is generally considered the "mother" of computerized text analysis. The *General Inquirer* is a compilation of a set of rather complex word count routines. It was designed as a multipurpose text analysis tool that was strongly informed by both need-based and psychoanalytic traditions. Historically, three thematic dictionaries, the Harvard III Psychosociological Dictionary, the Stanford Political Dictionary, and the Need-Achievement Dictionary have been applied the most, with the Need-Achievement Dictionary receiving special attention in psychology. The Need-Achievement Dictionary was created in an attempt to replace the complex judge-based scoring of achievement imagery in thematic apperception test (TAT) stories by computerized content analysis.

The *General Inquirer* goes beyond counting words. In a two-step process it first identifies so called homographs (ambiguous words that have different meanings depending on the context). It then applies a series of preprogrammed disambiguation rules aimed at clarifying their meaning in the text. For example, human judges score the statement "He is determined to win" as achievement imagery. The *General Inquirer* identifies the word "determined" as an ambiguous NEED word and "win" as an ambiguous COMPETE word (because they both can have non-achievement-related meanings) and codes a statement as achievement imagery only if both aspects are present and occur in the NEED-COMPETE order.

The *General Inquirer* is unique in its flexibility. It can be used to study virtually any topic of interest by creating a user-defined dictionary. Its most critical advantage, the power to perform context-dependent word counts, is also its most serious pragmatic drawback. The construction of a custom dictionary with the specification of disambiguation rules is time consuming and in many cases not worth the extra effort (as compared with simple word counts). Nevertheless, it is not overstated to say that the GI has given birth to and still continues to shape the scientific field of computerized text analysis.

¹³ The first three paragraphs in this section are taken from Pennebaker, J. W., Mehl, M. R., et al. (2003). "Psychological aspects of natural language use: Our words, our selves." *Annual Review of Psychology* 54: 550.

In the context of this thesis research, the word count functions of the *General Inquirer* were employed chiefly to obtain scaled counts for the 902 text articles that were collected in the deal-centric database. Appendices B2 and B3 contain two sample text articles from the latter database. Table B1 below illustrates the *General Inquirer* output for the four categories that were studied in our research.

File	Format	Word-count	Left-overs	Positiv	Negativ	Goal	Means
B2) U-20 – 2002-11-13 – Reuters News – 46U.txt	r	254	57	2	3	1	11
	s	254	22.44	0.79	1.18	0.39	4.33
B3) N-21 – 2003-02-20 – Asia Pulse – 4SJ.txt	r	367	83	30	5	4	27
	s	367	22.62	8.17	1.36	1.09	7.36

Table B1: *General Inquirer* output across 4 categories for two sample articles

With reference to the table, the first two rows capture the GI output for the first sample article in appendix B2. The article reports on deal U-20, a \$53 million contract awarded to UTStarcom by China Telecom for new and expanded iPAS networks in southwest China. The bottom two rows represent information regarding deal N-21, a \$15 million contract awarded to Nortel by China Netcom for the construction of a long-haul backbone network.

The article names are shown in the left-most column. Moving from left to right, the next column indicates whether the numbers in the row are (r)real or (s)caled counts, where the latter type reports word counts as percentages of the total word-count. The next word-count column shows the total words in the article. The leftovers column reports number of words in the article that do not fall under the classification of any of the 189 GI content categories. The remaining 4 columns report counts of words in the text article that fall into each of the 4 GI categories that we investigate in our research. Looking at the first row, we observe that out of the 254 total words in the text article on deal U-20, 57 are unclassified, 2 fall in the *Positiv* category, 3 in the *Negativ* category, 1 in *Goal* and 11 under *Means*. With reference to the second row that reports scaled counts, these numbers correspond to 22.44%, 0.79%, 1.18%, 0.39% and 4.33% of the total word-count of 254. Similarly, the third and fourth rows show the results for the article on deal N-21.

Comparing the GI outputs of both articles, one can observe that differences exist in the relative occurrences of words in the various GI categories. The first article appears to have a relatively more negative outlook when compared to the second article. The former has 1.18% of total word-count that is classified as representing a negative outlook versus 0.79% representing a positive one. In contrast, for the second article, 8.17% of the total word-count show a positive outlook compared to 1.36% with a negative outlook.

Based on the assumptions of our research methodology, we interpret this difference as evidence that there is a more negative expected outcome for deal U-20 than N-21 from the sample of two articles. When looking back at the text in the article in appendix B2, we discover the reason for the relatively negative outlook on deal U-20. When the deal was announced, China Telecom had faced difficulties in its ongoing initial public offering. Capital spending was expected to be scaled back in the future and this contributed to a negative outlook for the \$53 million contract award to UTStarcom.

In contrast, for the article in appendix B3, the Nortel deal was viewed in more positive light because of the established product offering and the key significance of the national backbone that Nortel would be building.

The illustration and discussion above serve to provide the reader with a clearer picture of the *General Inquirer* content analysis tool and how a portion of its overall output was used in the context of this research. In the above example, we described and analyzed the output for two articles. In our research, this approach was extended to the sample of 902 articles that reported on 108 deals. Statistical analysis was conducted on the aggregated output from GI and comparisons were made across various dimensions to obtain some of our research findings.

B2: Sample article I

UTSTARCOM INKS US\$53 MLN DEAL WITH CHINA TELECOM.

249 words

13 November 2002

23:35

Reuters News

English

(c) 2002 Reuters Limited

HONG KONG, Nov 14 (Reuters) - UTStarcom Inc said it will supply US\$53 million in telecoms gear to China's largest telephone company China Telecom, in the latest of a flurry of China-based deals for UTStarcom worth more than US\$100 million. Under the latest deal, California-based UTStarcom said it will supply equipment for use in China Telecom's personal access systems in two cities in southwest China.

The deal is the fourth in about a month for UTStarcom and various Chinese telecoms operators.

Last week the company announced a US\$35 million deal with China Netcom, which operates fixed-line phone networks in northern China. In October, it announced a combined US\$45 million in deals with China Telecom.

Despite the flurry of deals, future business from China Telecom could be limited by that company's recent setbacks in its ongoing initial public offering. China Telecom is in the midst of launching its IPO, which it scaled back by more than half to about US\$1.43 billion after the issue met with tepid demand from investors.

As a result of the scale-back, China Telecom said it would reduce its planned capital spending for 2003-2004 to 48.5 billion yuan (US\$5.9 billion) from 56.82 billion - an ominous sign for foreign suppliers who look to China as one of the world's few countries where spending on new telecoms gear is still brisk.

Document lba0000020021114dybe008su

B3: Sample article II

NORTEL NETWORKS TO BUILD MULTISERVICE BACKBONE FOR CHINA NETCOM.

356 words

20 February 2003

02:44

Asia Pulse

English

(c) 2003 Asia Pulse Pte Limited

BEIJING, Feb 20, Asia Pulse - Telecommunications operator China Netcom has awarded Nortel Networks a contract worth approximately US\$15 million to deploy a national multiservice backbone network.

This new network is expected to cover more than 110 major cities all around China, and to position China Netcom to provide Internet Protocol (IP) virtual private networks (VPNs) and other data services for government and enterprise customers. It is expected to be in operation by March 2003.

China Netcom plans to deploy several multiservice switching solutions from Nortel Networks Passport multiservice portfolio. Nortel Networks Passport 15000 and Passport 7000 Multiservice Switches and Passport VPN Extender Cards will position China Netcom to drive increased revenues, while fully leveraging existing infrastructure and extending current frame relay and ATM services.

"The national backbone is expected to play a key role for China Netcom to exploit data markets by providing abundant, high-quality and differentiated services to better satisfy customer demands," said Leng Rongquan, vice president of China Netcom, in a press statement.

Nortel Networks Passport portfolio consists of Passport 7000, Passport 15000, and Passport 20000 Multiservice Switches supporting ATM, frame relay, IP VPN and voice services over ATM and MPLS networks.

The scalable Passport architecture - along with Nortel Networks Preside integrated network, service and policy management software - makes Nortel Networks Passport IP VPN solutions suitable for multiservice providers that need a central office-based platform for delivering IP VPN services.

Nortel Networks Passport 15000 Multiservice Switch is a high-capacity, carrier-grade switch that supports IP VPN, ATM, frame relay, MPLS, circuit emulation and voice services.

Passport 15000 provides a versatile, reliable and scalable solution to meet the challenges of today's network service providers, enabling them to 'grow as they

go' in terms of network expansion and deployment of new features.

The Passport 7000 Multiservice Switch is a high-density switch that gives service providers a robust platform for network convergence without compromising quality of service.

Nortel Networks Passport 7000 provides a reliable and versatile solution to reduce network costs and complexity while supporting high-value, revenue-generating services.

ASIA PULSE.

Document apulse0020030220dz2k0008p

Appendix C: Compiled UTStarcom and Nortel business deals

UTStarcom Inc. business deals (2002-2004)

ID	Source	Domestic/CoV	Date	Value	Location	Product	Type	Details
U-1	MS	China Netcom	200201	70	Sichuan, Zhejiang	Expand PAS and IPAS	Contract	Won contract for PAS expansion and IP-based PAS
U-2	MS	China Telecom	200202	10.7	Guangxi, Shanxi	New IPAS	Contract	Won contract to build new IP-based PAS system
U-3	MS	China Telecom	200203	43.7	Yunnan	New PAS and IPAS	Contract	Won contract for new PAS and IP-based PAS Contract
U-4	MS	China Telecom	200203	34.4	Northern/Southern China	Expand PAS	Contract	Won contract for PAS Expansion contract
U-5	MS	China Telecom	200203	20	Guangzhou	Expand PAS	Contract	Won contract for PAS Expansion contract
U-6	CBR	Shandong government	200203	18	Shandong	New and expand PAS	Contract	Won contract from the Government of Shandong to deploy IP-based PAS city-wide wireless access in six cities
U-7	MS	China Telecom	200204	22.2	Xian	New and expand PAS	Contract	Won contract for new and PAS expansion contract
U-8	MS	China Telecom	200204	19.6	Fujian	Expand PAS and IPAS	Contract	Won contract for PAS and IP-based PAS Expansion
U-9	MS	China Telecom	200205	37	Northern China	Expand PAS and IPAS	Contract	Won contract for PAS and IP-based PAS Expansion
U-10	MS	China Telecom	200206	40	Jiangxi, Sichuan, Shaanxi	New PAS and IPAS	Contract	Won contract for new PAS and IP-based PAS Contract
U-11	EIU	China Telecom	200207	18.7	Hebei	New IPAS	Contract	UTStarcom to provide IP-based wireless access system
U-12	MS	China Telecom	200207	20	Northern/Southern China	New PAS and IPAS	Contract	Won contract for PAS and IP-based PAS wireless access
U-13	EIU	China Netcom	200208	18	Northern China	New PAS and IPAS	Contract	UTStarcom to provide PAS and IPAS equipment for China Netcom expansion in northern China
U-14	EIU	China Netcom	200209	34	Henan and Inner Mongolia	New PAS and IPAS	Contract	UTStarcom to supply equipment for PAS network build-out in cities in Henan and Inner Mongolia
U-15	EIU	China Telecom	200209	47	Southern China	Expand PAS	Contract	UTStarcom to provide PAS equipment for China Telecom expansion in southern China
U-16	EIU	China Telecom	200209	22	Southern China	New and expand PAS	Contract	UTStarcom to provide PAS and IP-based PAS equipment for China Telecom expansion in southern China
U-17	MS	China Telecom	200210	22.2	Southern China	New and expand IPAS	Contract	IP-based PAS Equipment
U-18	CBR	China Telecom	200210	22.7	Zhejiang	Expand PAS	Contract	Won contracts to expand China Telecom network in Zhejiang
U-19	MS	China Telecom	200211	35	Heilongjiang	New IPAS	Contract	IP-based PAS Equipment
U-20	MS	China Telecom	200211	53	Southwest China	New and expand IPAS	Contract	IP-based PAS Equipment
U-21	EIU	China Telecom	200211	61	Northern China	New IPAS	Contract	UTStarcom to provide its IP-based PAS system to China Netcom in Northern China
U-22	EIU	China Telecom	200211	31.7	Jiangsu	New and expand IPAS	Contract	UTStarcom to supply its IP-based PAS system in Jiangsu
U-23	EIU	China Telecom	200212	30	Liaoning, Shandong	New and expand IPAS	Contract	UTStarcom to supply IPAS equipment for China Netcom
U-24	EIU	Datang Telecom Technology and Industry	200212		Beijing	3G wireless	Agreement	Firms to develop system equipment for 3G mobile network in China
U-25	EIU	China Telecom	200212	32	Guangxi	Expand PAS and IPAS	Contract	UTStarcom to provide PAS equipment in Guangxi
U-26	EIU	China Telecom	200301	47	Jiangxi and Zhejiang	New and expand PAS	Contract	UTStarcom to supply PAS equipment for China Telecom in Jiangxi and Zhejiang
U-27	EIU	China Telecom	200301	114	Hebei, Shandong and Liaoning	New and expand PAS	Contract	UTStarcom to supply PAS equipment to China Netcom's local wireless service in Hebei, Shandong and Liaoning
U-28	CBR	China Telecom	200301	80	Guangdong	New IPAS	Contract	Won contract to build networks in Guangdong
U-29	EIU	China Telecom	200301	45	Shaanxi	Expand IPAS	Contract	Won contract from Hubei Telecom, a subsidiary of China Telecom, to provide IP-based personal access system (PAS) platform in Wuhan, Hubei
U-30	CBR	China Telecom	200302	26.5	Hubei	New IPAS	Contract	Won contract to expand China Telecom's Xiao Linglong (Little Smart) network
U-31	CBR	China Telecom	200303	50	Northern cities	Expand IPAS	Contract	UTStarcom to provide PAS equipment to China Telecom in Guizhou
U-32	EIU	China Telecom	200303	30	Guizhou	New IPAS	Contract	UTStarcom to provide IP-DSLAM multimedia mobile platform to China Netcom in Shandong and Shanxi
U-33	EIU	China Telecom	200303	40	Jiangsu, Guangdong	Wireline AN-2000	Contract	Won contract for expansion of PAS networks in Jiangsu and Guangdong
U-34	CBR	China Telecom	200303	40	Jiangsu, Guangdong	Expand PAS	Contract	Won contract for deployment of PAS networks in Beijing
U-35	CBR	China Telecom	200304	17.5	Beijing	New PAS	Contract	Won contract for expansion of its PAS network in Yunnan
U-36	CBR	China Telecom	200304	30	Yunnan	Expand PAS	Contract	Won contract for expansion of its PAS network in Yunnan
U-37	CBR	China Telecom	200305	20	Jiangsu	Expand PAS	Contract	Won contract from Jiangsu Telecom, a subsidiary of China Telecom, to expand its PAS network in Suzhou

Note: The "source" column comprise China Business Review (CBR), The Economist Intelligence Unit (EIU), and Morgan Stanley (MS) analyst reports.

U-38	EIU	China Telecom	200305	20 Guangdong	Expand IPAS	Contract	UT Starcom to supply PAS gear to Telecom in Guangdong
U-39	EIU	China Netcom	200305	57.9 Beijing	New IPAS	Contract	UT Starcom to provide PAS equipment to Netcom in Beijing Won contract from China Netcom to extend its PAS system in suburban cities near Tianjin
U-40	CBR	China Netcom	200306	27.7 Tianjin	Expand IPAS	Contract	Won contract from China Netcom to expand its PAS service in Henan
U-41	CBR	China Netcom	200307	28.7 Henan	Expand IPAS	Contract	Won contract to deploy PAS systems in several cities in Heilongjiang
U-42	CBR	China Netcom	200306	43 Heilongjiang	New IPAS	Contract	Won contract to provide 200,000 DSL lines in eight provinces
U-43	CBR	China Telecom	200307	Zhejiang, Jiangsu, Guang dong, Chongqing	Wireline AN-2000	Contract	Won contract to expand its PAS network in Guangdong
U-44	CBR	China Telecom	200307	40 Guangdong	Expand IPAS	Contract	Lines of AN-2000 IB IP-based DSLAM solution
U-45	IMS	China Netcom	200307	Inner Mongolia, Shandong, Shanxi, Heilongjiang, Tianjin, Hei bei, Shandong, Shanxi	Wireline AN-2000	Contract	Won contract to provide 200,000 DSL lines in Heilongjiang, Tianjin, Hebei, Shandong, and Shanxi
U-46	CBR	China Netcom	200308	30 Shandong	Wireline AN-2000	Contract	Won contract to expand its PAS network in Shandong
U-47	CBR	China Netcom	200308	30 Shandong	Expand IPAS	Contract	Won contract to expand its PAS network in Jiangsu and provide 500,000 handset units
U-48	CBR	China Telecom	200309	80 Jiangsu	Expand IPAS	Contract	Won contract from China Telecom for PAS equipment in Chengde, Sichuan
U-49	CBR	China Telecom	200309	30 Sichuan	Expand IPAS	Contract	Won contract from China Telecom for PAS equipment in Zhejiang
U-50	CBR	China Telecom	200309	27 Zhejiang	Expand IPAS	Contract	Won contract from China Telecom for PAS equipment in Liaoning
U-51	CBR	China Netcom	200309	20 Liaoning	Expand IPAS	Contract	Won contract from China Netcom for an expanded deployment of PAS in several cities in Heilongjiang
U-52	CBR	China Netcom	200310	32 Heilongjiang	Expand PAS	Contract	With Panasonic Mobile Communications Co. (Japan); will form mobile handset joint venture, Universal Communications Technology Hangzhou, in Zhejiang to build W-CDMA and TD-SCDMA handsets for domestic and international markets (Japan:51%
U-53	CBR	Panasonic	200311	10 Zhejiang	W-CDMA and TD- SCDMA development	Joint Venture	Signed contract with Shanxi China Netcom, a subsidiary of China Netcom, to expand and upgrade existing IP-based PAS networks in Shanxi
U-54	CBR	China Netcom	200311	30 Shanxi	Expand IPAS	Contract	Signed contract with China Netcom for PAS handsets in Liaoning
U-55	CBR	China Netcom	200311	31 Liaoning	New PAS handsets	Contract	Awarded contract by China Telecom to expand its existing IP-based PAS networks in Yunnan
U-56	CBR	China Telecom	200312	23 Yunnan	Expand IPAS	Contract	Signed contract for deployment of its PAS infrastructure equipment
U-57	CBR	China Telecom	200401	12 provinces incl. Guangdong, Zhejiang, Jiangsu, Sichuan,	New PAS	Contract	Won contract to deploy 220,000 lines of its IP-based network (AN-2000 IP-DSLAM)
U-58	CBR	China Telecom	200401	200 Chongqing	Wireline AN-2000	Contract	UT Starcom to provide PAS equipment to China Netcom in Shandong
U-59	EIU	China Netcom	200402	40 Shandong	Expand IPAS	Contract	Deployment of AN-2000 IB IP-DSLAM
U-60	IMS	China Netcom	200402	China	Wireline AN-2000	Contract	UT Starcom to provide PAS gear to China Netcom in Henan
U-61	EIU	China Netcom	200402	32 Henan	Expand PAS	Contract	UT Starcom to supply PAS gear to China Telecom in Guizhou
U-62	EIU	China Telecom	200402	18.8 Guizhou	Expand IPAS	Contract	UT Starcom to provide PAS equipment to China Netcom in Beijing and Heilongjiang
U-63	EIU	China Netcom	200403	85.7 Beijing, Heilongjiang	Expand PAS	Contract	Signed contract to expand its PAS network in Hebei
U-64	CBR	China Netcom	200404	75 Hebei	Expand IPAS	Contract	Won contract to expand network and services to all of Jiangsu
U-65	CBR	China Telecom	200404	40 Jiangsu	Expand IPAS	Contract	Expansion of IP-based PAS Platforms
U-66	MS	China Telecom	200404	20 Shanxi	Expand IPAS	Contract	Expansion of IP-based PAS Platforms
U-67	MS	China Telecom	200404	22 Fujian	Expand IPAS	Contract	Won contract from China Telecom Corp to expand and optimize networks in Suzhou and Taizhou, Jiangsu
U-68	CBR	China Telecom	200405	21 Jiangsu	Expand IPAS	Contract	Expansion of IP-based PAS Platforms
U-69	MS	China Telecom	200406	56 Shanghai	Expand IPAS	Contract	Awarded contracts by China Telecom Corp. to provide handsets
U-70	CBR	China Telecom Corp.	200409	40 Zhejiang, Jiangxi, Anhui, Guangdong, Shandong, Tibet	New IPAS handsets	Contract	Deployment of AN-2000 IB and DSLAM Platforms
U-71	MS	China Telecom	200409	Guangdong, Shandong, Tibet	Wireline AN-2000	Contract	Won contract from China Netcom Corp. to expand its PAS network to 11 cities in Hebei
U-72	CBR	China Netcom Corp.	200410	37 Hebei	Expand IPAS	Contract	Will expand metropolitan area network of China Mobile in Tianjin (deploy NetRing Multiservice Optical Tpi Solutions)
U-73	CBR	China Mobile	200410	Tianjin	NetRing	Contract	Expansion of IP-based PAS Platforms
U-74	MS	China Netcom	200411	20 Liaoning	Expand IPAS	Contract	

Nortel Networks Corp, business deals (2002-2004)

ID	Source	Domestic/CoY	Date	Value	Location	Product	Type	Details
N-1	CBR	China Unicom	200201	14	Beijing, Fujian, Guangdong, Zhejiang	Optera Long Haul 1600, Preside Network Mgmt	Contract	Won contract from China Unicom to supply its Optical Long Haul backbone networks in Beijing, Fujian, Guangdong, and Zhejiang
N-2	FS	China Telecom	200201			Optera Connect DX, Long Haul 1600 Succession Communication Server 2000	Contract	Nortel completes Feb 2001 contract to build longest backbone system for China Telecom
N-3	CBR	China Telecom	200203		Beijing, Shanghai, Guangzhou, Shenzhen	(CS2000), CS3000, interactive multimedia server and SIP client, Passport packet voice gateway, IAD and SIP client, Passport 15000 & 7480 multiservice switches, Shasta 5000 BSN in Tianjin; Passport 6480 & 4460 switches and Shasta 5000 BSN in Shandong	Contract	Won contract to provide next-generation VoIP in China (trial deployment)
N-4	FS	China Unicom	200205		Tianjin, Shandong	GSM expansion	Contract	Nortel to deploy multiservice metro networks in Tianjin, Shandong
N-5	CBR	China Mobile	200205		Hebei	Optera Metro	Contract	Won contract to expand the GSM network in Hebei
N-6	EIU	China Unicom	200206	16	Guangdong	Passport 6480 multiservice edge switches and BSN routers	Contract	Nortel to set up optical networks in seven Chinese cities to support Unicom's wireless and long-distance services
N-7	FS	SINOPEC	200206		Liaoning, Henan, Jiangxi (Nelcom); Jiangxi, Shaanxi, Guizhou, Zhejiang, Hunan, Shanghai, Beijing (Telecom)	GSM expansion	Contract	Advanced contract to expand nationwide high-traffic backbone and merge its production network and sales network
N-8	EIU	China Unicom, Telecom	200207			Shasta 5000 BSN (Nelcom); Passport 7000 & 15000 multiservice switch, Passport 8600 routing switch	Contract	Nortel to provide next-generation platform for broadband and value-added Internet Protocol (IP) services
N-9	CBR	China Mobile	200208	26 B	Shenzhen	GSM expansion	Contract	Won contract from Shaanxi Mobile, a subsidiary of China Mobile, to expand its GSM network
N-10	FS	China Telecom	200208		Hunan	Optera Connect DX, Long Haul 1600	Contract	Contract to build optical ring network
N-11	FS	China Telecom	200208		Zhejiang	Optera Connect DX	Contract	Contract to build optical ethernet network in Shaoying, Zhejiang province
N-12	CBR	China Mobile	200208		Shanghai, Zhejiang, Chongqing, Ningxia	Optera Metro 5200, 3500, Passport 8600	Contract	Won contract to provide an Optical Ethernet solution for networks in Shanghai and Zhejiang
N-13	CBR	China Unicom	200209	40	Shanxi, Xinjiang	GSM expansion Passport 7400 multiservice, Passport 8800 routing switches, Contivity VPN, Alteon Switched Firewall syst	Contract	Won contract to help China Unicom expand its networks in Chongqing, Ningxia, Shanxi, and Xinjiang
N-14	EIU	Agricultural Bank of China (ABC)	200210		Sichuan and Chengdu 10 provinces - Beijing, Tianjin, Hebei, Henan, Shandong, Shaanxi, InnerMong, Liaoning, Jilin, Heilongjiang	Passport 15000-VSS, Passport 7000 multiservice switch	Contract	Nortel to build wide area network (WAN) linking ABC's Sichuan branches to main branch in Chengdu
N-15	EIU	China Telecom	200210		Heilongjiang	Optera Connect DX, Shasta 5000 BSN, Passport 74, 15k multiservice switch, Passport 8600 routing switch	Contract	Nortel to build backbone networks in northern China
N-16	CBR	China Telecom, China Netcom	200210		Hubei, Heilongjiang, Zhejiang		Agreement	Signed agreements with China Telecom and China Netcom to supply broadband service nodes in Hubei and Heilongjiang
N-17	CBR	China Unicom	200210	280	Shandong, Heilongjiang, Heilongjiang, Hunan, Henan	Univis CDMA2000 1X equipment	Contract	Will supply network infrastructure equipment to China Unicom (upgrade 2G network)
N-18	CBR	China Unicom	200212	65	Zhejiang, Shandong	Univis CDMA2000 1X equipment	Contract	Nortel to deploy Nortel Networks Univis radio, core switching and intelligent networking equipment
N-19	FS	Shanghai Post	200301		Shanghai		Agreement	Signed cooperation agreement to forge a strategic alliance to work in sales, research, production, and tech support in optical and data comm
N-20	FS	China Netcom	200301		Shanghai, Nanjing, Tibet, Wuhan, Changsha, Shanghai, Nanjing, Wuhan, Xinyang, J'man and Qingdao	Optera Connect HDX, Long Haul 1600	Contract	Won contract to deploy two national optical transmission backbones

Note: The "source" column comprise China Business Review (CBR), The Economist Intelligence Unit (EIU), and Factiva (FS).

N-21	CBR	China Netcom	2003011	Guangzhou, Fuzhou and Hangzhou	Passport 15000, 7000 multiservice switches and Passport VPN Extender Cards (enables 20000 & 15000 switches)	Contract	Won contract to deliver and install long-haul networks covering 5,000 km + multiservice backbone
N-22	CBR	China Mobile	2003033	Hubei	GSM expansion	Contract	Will upgrade China Mobile's GSM infrastructure in Hubei
N-23	CBR	Shanghai government	2003034	Shanghai	Passport 8800, Baystack 420, BCM routers	Contract	Won contracts from government of Yangpu, Shanghai for network equipment and solutions
N-24	CBR	China Telecom	2003044	Hainan	Passport 15000, 7000 multiservice switches and Passport VPN Extender Cards (enables 20000 & 15000 switches)	Contract	Won contract from Hainan Telecom, a subsidiary of China Telecom, for equipment to upgrade its fixed-line ATM network in Hainan
N-25	CBR	China Unicom	2003055	Shandong	Optera Connect DX, Long Haul 1600	Contract	Won contract from Shandong Unicom, a subsidiary of China Unicom, to provide a provincial optical backbone network
N-26	CBR	China Unicom	2003055	Shandong	Optera Connect DX, Long Haul 1600	Contract	Won contract from Shandong Unicom, a subsidiary of China Unicom, to deploy an optical backbone in Shandong
N-27	CBR	China Telecom	2003077	Zhejiang, Hubei	Upgrade Shasia 5000 ESN, Passport 8800 routers & switches	Contract	Won contract to expand its broadband internet protocol networks in Zhejiang and Hubei
N-28	CBR	China Railway Communications Co. Ltd.	2003077	Chongqing	Communication Server (CS2000)-Compact superclass switches, Packet Voice Gateways (PVG)	Contract	Won contract to be the exclusive supplier of packet voice (VoIP) equipment for Chongqing
N-29	EIU	China Mobile	2003088			Agreement	Firms established joint lab to test and develop TD-SCDMA wireless platform in China
N-30	EIU	China Mobile	2003088	Xinjiang, Shanghai, Hunan	Succession Communication Server 2000 (CS2000), interactive multimedia server (or new name if multimedia communication portfolio MCP 5200) softswitch, Passport packet voice gateway, IAD and SIP client	Contract	To Nortel Networks of Canada by China Mobile, China Telecom and China Unicom; Nortel to provide support and services to China Mobile in Xinjiang, China Telecom in Shanghai and China Unicom in Hunan
N-31	CBR	China Netcom	2003088	Shandong		Contract	Won contract from Netcom to provide equipment for its next-generation network in Shandong
N-32	FS	China Telecom, Unicom and Mobile	2003088			Agreement	Nortel signed extended warranties for air 3 companies (remote tech support, hardware repair and return, field service engineering and knowledge transfer svcs)
N-33	FS		2003088			MOU	Nortel to spend \$200m over next 3 years to do R&D in China
N-34	EIU	China Unicom	2003089	Chongqing, Heilongjiang, Shandong, Zhejiang	CDMA2000-1X	Contract	Nortel to provide CDMA2000-1X gear to China Unicom in Chongqing, Heilongjiang, Shandong and Zhejiang. GIG phase upgrade 2G network
N-35	FS	China Telecom, Netcom	2003111	Shanghai, Shandong	Passport 7000 switches to China Telecom, Passport 15000 & 7000 for ChinaNetcom	Contract	Nortel's passport switches adopted to provide services to end-users
N-36	CBR	China Mobile	200402	Hubei	GSM expansion	Contract	Won contract from China Mobile to expand and optimize its GSM network in Hubei
N-37	CBR	PRC Ministry of Railways	200403	Qinghai	Wireless GSM-R	Agreement	Signed agreement with the PRC Ministry of Railways to provide a GSM network for the Qinghai-Thet Railway
N-38	FS	SINOPEC	200403	Shenzhen	Passport 6k multiservice switches, Contivity 2700, 1100 & 600 secure IP svcs, Passport 6610 routing switches, Ateon application switches	Contract	Deployed Enterprise Networking solutions that include new infrastructure and upgrades
N-39	EIU	China Pritan	200406	Hunan, Sichuan, Fujian, Guangdong, Jiangsu, Shanghai, Hubei, Zhejiang		Agreement	Compared to develop mobile telecommunications equipment compatible with TD-SCDMA standard Selected by China Telecom to provide optical systems to expand its networks in Changsha, Hunan; Chongqing & Chengde, Sichuan; Fuzhou, Fujian; Guangzhou, Guangdong; Nanjing, Jiangsu; Shanghai; Wuhan, Hubei; Hangzhou, Zhejiang; Hefei, Anhui
N-40	CBR	China Telecom	200409		Optera Long Haul 1600, Seves Edge router 5500,	Contract	

Bibliography

Agarwal, S. and Ramaswami, S. N. (1992). "Choice of foreign market entry mode: Impact of ownership, location and internationalization factors." Journal of International Business Studies 23(1st Quarter): 1-27.

Anderson, E. and Gatignon, H. (1986). "Modes of entry: A transactions cost analysis and propositions." Journal of International Business Studies 17(Fall): 1-26.

Beamish, P. W. and Banks, J. C. (1987). "Equity joint ventures and the theory of the multinational enterprise." Journal of International Business Studies 18(Summer): 1-16.

Buckman, R. (2004) China to open telecom sector but few foreign players rush in - Lack of enthusiasm blamed on confusing regulations, government meddling The Wall Street Journal December 9, 2004 B5.

Chen, K. (2003) Chinese standards force cooperation - Foreign wireless producers must work with rivals despite fairness concerns The Asian Wall Street Journal December 10, 2003 A1.

Chen, K. (2004) China crafts Telecom Law to level playing field The Wall Street Journal May 20, 2004 B5.

Child, J. and Tse, D. K. (2001). "China's transition and its implications for international business." Journal of International Business Studies 32(1): 5-21.

China Business Review (2005), www.chinabusinessreview.com accessed on April 10, 2005.

Dunning, J. H. (1988). "The eclectic paradigm of international production: A restatement and some possible extensions." Journal of International Business Studies 19(1): 1-31.

EIU (2005). China risk: Tax policy risk, Economist Intelligence Unit - RiskWire. 6.

Erramilli, M. K. and Rao, C. P. (1993). "Service firms' international entry-mode choice: A modified transaction-cost analysis approach." Journal of Marketing 57(July): 19-38.

Factiva (2005) Factiva content watch - Overview, <http://www.factiva.com/sources/contentwatch.asp?node=menuElem1522> accessed on April 10, 2005.

Fan, Q. (2005). "Regulatory factors influencing Internet access in Australia and China: a comparative analysis." Telecommunications Policy 29: 191-203.

Fung, K. C., Lau, L. J., et al. (2004). U.S. Direct Investment in China. Washington D.C., The American Enterprise Institute Press.

- Gao, P. and Lyytinen, K. (2000). "Transformation of China's telecommunications sector: A macro perspective." Telecommunications Policy 24: 719-730.
- Guan, S. Y. (2003). China's telecommunications reforms - From monopoly towards competition. Hauppauge, NY, Nova Science Publishers, Inc.
- Guerrera, F. (2004) Modern emperors adopt a random take on China's telecom companies Financial Times November 6, 2004 12.
- He, Z. (1997). A history of telecommunications in China: Development and policy implications. Telecommunications and Development in China. P. Lee. Cresskill, NJ, Hampton Press.
- Hou, X. (2002) Nortel amazed by Chinese market China Daily October 29, 2002.
- Hu, M. Y., Zhang, G. P., et al. (2004). "Modeling foreign equity control in Sino-foreign joint ventures with neural networks." European Journal of Operational Research 159: 729-740.
- Interfax China (2004) Press Release - China will issue 3G licenses in 2005 - Interfax 3G report Interfax China Business News June 18, 2004.
- Johanson, J. and Vahlne, J.-E. (1977). "The internationalization process of the firm - A model of knowledge development and increasing foreign market commitment." Journal of International Business Studies 8(1): 23-32.
- Johanson, J. and Vahlne, J.-E. (1990). "The mechanism of internationalization." International Marketing Review 7(4): 11-24.
- Kogut, B. (1983). Foreign direct investment as a sequential process. The multinational corporation in the 1980s. C. Kindleberger and D. Audretsch. Cambridge, MA, MIT Press: 38-56.
- Kogut, B. and Singh, H. (1988). "The effect of national culture on the choice of entry mode." Journal of International Business Studies 19(Fall): 411-432.
- Kothari, S. P. and Short, J. E. (2004). "The effect of disclosures by management, analysts, and financial press on the equity cost of capital." 1-55.
- Krippendorff, K. (2004). Content analysis - An introduction to its methodology. Thousand Oaks, California, Sage Publications, Inc.
- Li, W. (2005) New telecoms reshuffle considered China Daily April 6, 2005.

Luo, Y. (1995). "Business strategy, market structure, and performance of international joint venture: The case of joint ventures in China." Management International Review 35(3): 241-264.

Luo, Y. (1999). "Structure-performance relationship in a transitional economy context: An empirical study of multinational alliances in China." Journal of Business Research 46(1): 15-30.

Luo, Y. and O'Connor, N. (1998). "Structural change to foreign direct investment in China: An evolutionary perspective." Journal of Applied Management Studies 7(1): 95-109.

Luo, Y. and Park, S. H. (2001). "Strategic alignment and performance of market-seeking MNCs in China." Strategic Management Journal 22(2): 141-155.

MII (1999). China telecommunications over 50 years. Beijing, Ministry of Information Industry.

Mueller, M. and Lovelock, P. (2000). "The WTO and China's ban on foreign investment in telecommunications services: A game-theoretic analysis." Telecommunications Policy 24: 731-759.

Mueller, M. and Tan, Z. (1997). China in the information age: Telecommunications and the dilemmas of reform (The Washington Papers). Westport, CT, The Center for Strategic and International Studies, with Praeger Publishers.

National Bureau of Statistics of China (2004). China Statistical Yearbook 2004. Beijing, China Statistics Press.

Norris, G. (2003) Big deals in China and France give Nortel a boost The Toronto Star September 17, 2004 C01.

Pan, Y., Li, S., et al. (1999). "The impact of order and mode of market entry on profitability and market share." Journal of International Business Studies 30(1): 81-104.

Pan, Y. and Tse, D. K. (1996). "Cooperative strategies between foreign firms in an overseas country." Journal of International Business Studies 26(5): 929-946.

Pan, Y. and Tse, D. K. (2000). "The hierarchical model of market entry modes." Journal of International Business Studies 31(4): 535-554.

Pangestu, M. and Mrongowius, D. (2004). Telecommunications services in China: Facing the challenges of WTO accession. China and the WTO: Accession, policy reform, and poverty reduction strategies. D. Bhattasali, L. Shantong and W. Martin. Washington DC, Oxford, The World Bank and Oxford University Press: 157-179.

Pennebaker, J. W., Mehl, M. R., et al. (2003). "Psychological aspects of natural language use: Our words, our selves." Annual Review of Psychology 54: 550.

People's Daily (2004) Investing in future, responding to challenges: Interview People's Daily October 25, 2004 3.

Pottinger, M. (2002a) On eve of visit, China scoops up U.S. equipment The Asian Wall Street Journal October 22, 2002 A1.

Pottinger, M. (2002b) China boosts U.S. telecom suppliers - Deal with Lucent, Motorola may be move to smooth way for Friday's summit The Wall Street Journal October 22, 2002 A17.

PRNewswire (2003) UTStarcom signs new contract valued at \$26.5 million with China Telecom PR Newswire February 11, 2003.

Pyramid Research (1999). Telecommunications markets in China: Analysis of data, voice and convergence opportunities. Cambridge, MA, Pyramid Research (The Economist Intelligence Unit).

RCR (2004) Nortel joins rivals in establishing Chinese alliance RCR Wireless News June 28, 2004 15.

Reuters (2004) China sets 2005 inflations target at 4 percent Reuters News December 14, 2004.

Reuters News (2003) Nortel to invest \$200 mln in China R&D Reuters News September 16, 2003.

SEC (2005) EDGAR database, United States Securities and Exchange Commission, <http://www.sec.gov/edgar.shtml> accessed on April 11, 2005.

Smith-Gillespie, A. (2001) "Building China's high-tech telecom equipment Industry: A study of strategies in technology acquisition for competitive advantage." Master in City Planning and Master of Science in Technology and Policy (Department of Urban Studies and Planning, and Technology and Policy Program) Massachusetts Institute of Technology.

Stone, P. J. (1997). Thematic text analysis: New agendas for analyzing text content. Text Analysis for the Social Sciences. C. W. Roberts. Mahwah, New Jersey, Lawrence Erlbaum.

Stone, P. J., Dunphy, D. C., et al. (1966). The General Inquirer: A computer approach to content analysis. Cambridge, Massachusetts and London, England, The MIT Press.

Sun, Q., Tong, W., et al. (2002). "Determinants of foreign direct investment across China." Journal of International Money and Finance 21(1): 79-113.

- Tan, Z. (2002). "Product cycle theory and telecommunications industry - foreign direct investment, government policy, and indigenous manufacturing in China." Telecommunications Policy 26: 17-30.
- Tang, H. S.-C. and Lee, P. S. N. (2003). "Growth in adversity: Non-economic factors in telecommunications development in China." Telematics and Informatics 20: 19-33.
- The Economist (2004a). China's economy: The great fall of China? The Economist. May 13th, 2004.
- The Economist (2004b). China's economy: Time to hit the brakes. The Economist. May 13th, 2004.
- Thomson Research (2005) Product Overview, <http://research.thomsonib.com/> accessed on April 11, 2005.
- Toyne, B. and Nigh, D. (1998). "A more expansive view of international business." Journal of International Business Studies 29: 863-876.
- Tse, D. K., Pan, Y., et al. (1997). "How MNCs choose entry modes and form alliances: The China experience." Journal of International Business Studies 28(4): 779-805.
- USTR (2003). 2003 Report to Congress on China's WTO compliance, United States Trade Representative.
- USTR (2004). 2004 Reports to Congress on China's WTO compliance, United States Trade Representative.
- UTStarcom (2001) United States Securities and Exchange Commission Form 10-Q, UTStarcom Inc., <http://www.sec.gov/edgar.shtml> accessed on April 17, 2005.
- UTStarcom (2004) United States Securities and Exchange Commission Form 10-K, UTStarcom Inc., <http://www.sec.gov/edgar.shtml> accessed on April 17, 2005.
- UTStarcom (2005) United States Securities and Exchange Commission Form 10-K, UTStarcom Inc., <http://www.sec.gov/edgar.shtml> accessed on April 17, 2005.
- Williamson, O. E. (1981). "The economics of organization: The transaction cost approach." The American Journal of Sociology 87(3): 548-577.
- Xinhua (2003) Nortel Networks invests USD200 million in R&D in China Xinhua News Agency September 17, 2003.
- Xinhua (2004) Lucent deal with China Unicom not new Xinhua Financial Network News January 14, 2004.

Xinhua (2005) Analysis: Foreign capital enterprises may get 5-year grace period before unified corporate income tax Xinhua's China Economic Information Service.

Yan, D. and Warner, M. (2002). "Foreign's investors' choices in China: Going it alone or in partnership?" Human Systems Management 21: 137-150.

Yu, L., Berg, S., et al. (2004). "Market performance of Chinese telecommunications: New regulatory policies." Telecommunications Policy 28: 715-732.

Zhang, B. (2001). "Assessing the WTO agreements on China's telecommunications regulatory reform and industrial liberalization." Telecommunications Policy 25: 461-483.

Zhang, B. (2002). "Understanding China's telecommunications policymaking and reforms: A tale of transition toward liberalization." Telematics and Informatics 19: 331-349.

Zhang, Y., Zhang, Z., et al. (2004). "Determinants of structural change to sequential foreign direct investment across China: A synthesized approach." Singapore Management Review 26(1): 63-80.