The Development of an Appropriate Strategy Map

---An application of strategy map theory on China Mobile
ACKNOWLEDGEMENTS

Taking the opportunity, we would like to express our deep gratitude to our supervisor Claes-Göran Larsson for his valuable guiding and directions. And we really appreciate his patience and preciseness.

We would like to thank Mr. Lars Hasel for offering us the first guidance, and he encouraged us to do the research in this area.

Also, thanks to our friend Zuguang Zhen who is working in Ericsson for his help in the technical area.

Lastly, we want to thank all those lecturers at Umeå University who helped us to improve ourselves in many ways.

Lei Zhao
Meng Chen
25th November, 2008
Umeå Sweden
ABSTRACT

After several years practice and research, companies and researchers have agreed that management of a company can not only rely on financial performance measures, but non-financial measures should be also included in the set of tools. One of the most popular approaches to solve this problem are BSC (Balanced Scorecard) combining with KPI (Key Performance Indicators).

Balanced Scorecard has been introduced by Kaplan and Norton in 1992 which consists of a set of financial and non-financial measures which are categorized in four perspectives “financial”, “customer”, “internal processes”, and “learning and growth”. Key performance indicators are financial and non-financial metrics used to help a company define and measure progress toward goals and KPIs are typically tied to an organization's strategy through Balanced Scorecard.

In this thesis we limit our study to the Mobile Network Operator industry, use case study, as the research design, with a combination of quantitative and qualitative research methods. We summarized the limitation of the initial Balanced Scorecard, discussed the demand and benefits of strategy map, researched on principles and criteria of a suitable strategy map. Ultimately, we formulated the process of how to design a strategy map.

In practice, after several years of dramatic development, along with the saturation of the market and the fierce competitions, mobile network industry stepped into the age of depression; the sudden huge profits have been over. While a new wireless technology, 3G offers the mobile network operators (MNOs) a new chance to improve their value added services with high speed bandwidth from 3G technology, and make more profit from it. European 3G markets is the most competitive and developed now, while the Japan 3G was already in an advanced level. In the recent years, China as the biggest developing country also wants to start the 3G market.

With the defined KPIs, we benchmarked the performance of China Mobile to the three world’s leading MNOs, Vodafone, “3”, and NTT; ascertained the situation of China Mobile, set goals and discovered the cause-effect linkage of the KPIs, and finally formulate a strategy map for China Mobile according to the analysis. The strategy map is based on four perspectives, financial, customers, internal and learning and innovation perspectives, and in each perspective, practical solutions which are based on their strengths and weaknesses are provided. With the help of this research, the company can trace their problems and find the solutions for them.

Key words: Balanced Scorecard, Strategy Map, Key Performance Indicators, 3G
# List of Contents

## Chapter 1 Introduction

1.1 Background ................................................................. 1
1.2 Problems statement ....................................................... 4
1.3 Purpose of the study ...................................................... 4
1.4 Limitations ........................................................................ 5
1.5 Disposition of the thesis ................................................... 5

## Chapter 2 Research Methodology

2.1 Choice of the Subject ...................................................... 7
2.2 Preconceptions .................................................................. 8
2.3 Case Study as Research Design .......................................... 9
2.4 Qualitative and Quantitative Research methods ..................... 10
2.5 Data Collection ................................................................ 11
2.6 Scientific Approach .......................................................... 11
2.7 Validity and Reliability ........................................................ 12

## Chapter 3 Theoretical framework

3.1 Literature Review--the Performance Evaluation Models ............... 14
    3.1.1 The Balanced Scorecard ........................................... 14
    3.1.2 Key Performance Indicator, KPI ................................ 23
3.2 Practical KPIs for MNOs ..................................................... 26
    3.2.1 The financial perspective .......................................... 26
    3.2.2 Customer Perspective ................................................ 28
    3.2.3 Learning & Innovation Perspective .............................. 29
    3.2.4 Internal Perspective .................................................. 30
    3.2.5 External Factors (optional) ........................................ 30

## Chapter 4 Case study Vodafone, 3 Hutchison and NTT DoCoMo

4.1 Vodafone .......................................................................... 31
    4.1.1 Introduction to Vodafone .......................................... 31
    4.1.2 Data Analysis .......................................................... 32
    4.1.3 Case in Japan ............................................................ 33
    4.1.4 Summary .................................................................... 34
4.2 3 Hutchison ....................................................................... 34
    4.2.1 Introduction of 3 Hutchison ....................................... 34
    4.2.2 Data analysis ............................................................. 35
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.2.3 Summary</td>
<td>38</td>
</tr>
<tr>
<td>4.3 NTT DoCoMo</td>
<td>38</td>
</tr>
<tr>
<td>4.3.1 Introduction to NTT DoCoMo</td>
<td>38</td>
</tr>
<tr>
<td>4.3.2 DATA analysis</td>
<td>39</td>
</tr>
<tr>
<td>4.3.3 Summary</td>
<td>41</td>
</tr>
<tr>
<td>Chapter 5 Case study China Mobile</td>
<td>43</td>
</tr>
<tr>
<td>5.1 Introduction to China Mobile</td>
<td>43</td>
</tr>
<tr>
<td>5.2 Balanced Scorecard analysis with KPIs</td>
<td>44</td>
</tr>
<tr>
<td>5.2.1 Financial Perspective</td>
<td>44</td>
</tr>
<tr>
<td>5.2.2 Customer Perspective</td>
<td>45</td>
</tr>
<tr>
<td>5.2.3 Learning &amp; Innovation Perspective</td>
<td>47</td>
</tr>
<tr>
<td>5.2.4 Internal Perspective</td>
<td>48</td>
</tr>
<tr>
<td>5.2.5 External Factors that Have Great Influence on China Mobile</td>
<td>50</td>
</tr>
<tr>
<td>5.2.6 Summary</td>
<td>51</td>
</tr>
<tr>
<td>Chapter 6 Result and Conclusion</td>
<td>52</td>
</tr>
<tr>
<td>6.1 Comparison of China Mobile and three World’s leading MNOs</td>
<td>52</td>
</tr>
<tr>
<td>6.2 Visualizing Cause-Effect Factors</td>
<td>53</td>
</tr>
<tr>
<td>6.3 Strategy map</td>
<td>55</td>
</tr>
<tr>
<td>6.3.1 Financial Perspective</td>
<td>55</td>
</tr>
<tr>
<td>6.3.2 Customer Perspective</td>
<td>55</td>
</tr>
<tr>
<td>6.3.3 Internal Perspective</td>
<td>56</td>
</tr>
<tr>
<td>6.3.4 Learning and Innovation</td>
<td>56</td>
</tr>
<tr>
<td>6.3.5 Forming Strategy Map</td>
<td>57</td>
</tr>
<tr>
<td>6.4 Conclusion</td>
<td>59</td>
</tr>
<tr>
<td>6.5 Recommendations and Further Research</td>
<td>59</td>
</tr>
<tr>
<td>Reference List</td>
<td>61</td>
</tr>
<tr>
<td>Appendix 1 Background of 3G technology and the changes 3G brings</td>
<td>64</td>
</tr>
<tr>
<td>A.1 Introduction of Generations</td>
<td>64</td>
</tr>
<tr>
<td>A.2 Features of 3G</td>
<td>64</td>
</tr>
<tr>
<td>A.3 New applications</td>
<td>65</td>
</tr>
<tr>
<td>A.4 The Change from Value Chain to Value Web for MNOs</td>
<td>66</td>
</tr>
</tbody>
</table>
List of Figures

Fig 3.1 Four Perspectives of BSC ................................................................. 17
Fig 3.2 The Strategy Map ........................................................................... 19
Fig 3.3 The Process of Designing a Strategy Map ........................................ 22
Fig 3.4 Example of KPIs ............................................................................. 25
Fig 4.1 Operating Revenue of Vodafone from 2004 to 2007 ....................... 32
Fig 4.2 Registered 3G Subscribers of Vodafone from 2005 to 2007 ............ 32
Fig 4.3 FCF of Vodafone from 2005 to 2007 .............................................. 32
Fig 4.4 ARPU of Vodafone from 2004 to 2007 .......................................... 33
Fig 4.5 2005 Compare to 2004 of Vodafone ............................................ 33
Fig 4.6 Operating Revenue of 3 Hutchison from 2004 to 2006 .................. 35
Fig 4.7 Registered 3G Subscribers of 3 Hutchison from 2004 to 2007 ...... 36
Fig 4.8 ARPU of 3 Hutchison from 2004 to 2006 ..................................... 37
Fig 4.9 EBITDA of 3 Hutchison from 2004 to 2006 .................................. 38
Fig 4.10 Operating Revenue of NTT DoCoMo from 2004 to 2007 ............... 39
Fig 4.11 FOMA & Mova Subscriber Growth from 2003 to 2007 ................. 40
Fig 4.12 ARPU of NTT DoCoMo from 2004 to 2007 ................................ 41
Fig 4.13 FCF of NTT DoCoMo from 2003 to 2006 ..................................... 41
Fig 5.1 Service Revenue of China Mobile from 2004 to 2007 .................... 44
Fig 5.2 EBITA of China Mobile from 2004 to 2007 ................................... 44
Fig 5.3 Free Cash Flow of China Mobile from 2004 to 2007 ..................... 45
Fig 5.4 ARPU of China Mobile from 2004 to 2007 .................................... 45
Fig 5.5 Number of Subscribers of China Mobile from 2004 to 2007 ........... 45
Fig 5.6 Penetration Rate of China Mobile from 2004 to 2007 .................... 45
Fig 5.7 MOU of China Mobile from 2004 to 2007 ...................................... 46
Fig 5.8 Comparison between Contract and Prepaid Customers of China Mobile from 2003 to 2006 (No data provided from annual report 2007) ...................................... 46
Fig 5.9 Penetration Rate of China Mobile from 2004 to 2007 .................... 46
Fig 5.10 Average operating expenses per user per month of China Mobile from 2004 to 2007 ................................................................. 47
Fig 5.11 Number of Patent Application Submitted of China Mobile from 2004 to 2007 47
Fig 5.12 Personnel Expense of China Mobile from 2004 to 2007 ............... 48
Fig 5.13 Other Operating Expenses of China Mobile from 2004 to 2007 ...... 48
Fig 5.14 Number of Base Station of China Mobile from 2004 to 2007 ....... 49
Fig 5.15 Number of Sales Sites of China Mobile from 2004 to 2007 .......... 49
Fig 6.1 Cause-Effect link of different KPIs .................................................. 54
Fig 6.2 Strategy Map .................................................................................. 58
Fig A.1 Overview of Generations .............................................................. 64
Fig A.2 Traditional Value Chain ................................................................. 67
Fig A.3 The Mobile Commerce Value Web ................................................ 68
List of abbreviations occurred in the thesis

3G: The third generation of mobile technology
ARPU: Average revenue per user
BSC: Balanced scorecard
CRM: Customer resource management
CSF: Critical success factor
EBITDA: Earnings before interest, taxes, depreciation and amortization
FCF: Free cash flow
KPI: Key performance indicator
MNO: Mobile network operator
NPV: Net present value
Chapter 1 Introduction

This is a transdisciplinary thesis and both of business and wireless technology will be involved. In this chapter we will introduce the general information and give the readers a framework of the whole research in purpose of making readers understand this research easily. The following chapter starts with a background analysis, and then the reasons of subject selection and research problem. There are also a description of studies limitations and a definition list which including the keywords and some wireless technology terms.

And in this chapter, we would like to provide readers the background of the both industry perspective and the theoretical perspective. And depending on these factors and the problem exposed, we extended to our research questions and the purpose of our study.

1.1 Background

1.1.1 Industry background
In the previous score years; the mobile network industry had an enormous development. In 1998, there were only about 0.2 billion mobile phone subscribers, and in 2004 there were about 1.6 billion. The total numbers of mobile phone subscribers in the world was estimated at 2.14 billion in 2005. The subscriber count reached 2.7 billion by end of 2006 and 3.3 billion by November, 2007, thus reaching an equivalent of over half the planet's population. Around 80% of the world's population enjoys mobile phone coverage as of 2006. This figure is expected to increase to 90% by the year 2010.\(^1\)

Until 1980s some single network operators especially the national telecom operators still monopolized the whole value-chain of this industry, such as American Bell Telephone Company who controlled from the manufacture to sell and service, the whole value-chain in USA. Along with the development of new technologies and the increasing demands of customers, more and more companies took parts in this industry and in the following few years many mobile network operators squashed into top 50 of the biggest companies, like NTT, Deutsche Telekom, Vodafone, Verizon. The top 50 list comes from the magazine “Fortune”. The mobile industry stepped into the age of boom. But in recent years along with the saturation of the market and the fierce competitions, the sudden huge profits were over. Most of the operators are facing an embarrassing situation that the Annual Revenue per Unit (ARPU) is

\(^1\) International Telecommunication Union. (2009). Measuring the Information Society: The ICT Development Index
declining.

As a new wireless technology, 3G offers a new high speed bandwidth and that makes lots of imagines true. The MNOs can offer new value-added services to their subscribers and they can earn more profits from their subscribers. There is no doubt that the 3G is significant for MNOs and the 3G bring them a chance to buck the overall trend of declining ARPU.

The Mobile Network Operators launched 3G services emulatively. In the 3G era a new commercial war had started. 3G brings about a revolution in modern mobile network industry.

Japan and Korea started the 3G service earlier than other countries, and now they already built up a well-developed 3G market where around 80% of the population is using the 3G services. On the other side, the Europe region followed on the heels of the 3G development, and most of the European countries are using the 3G. Many big operators are expanding their business focusing on Europe region.

China as the biggest developing country, which has the most population, was planning for the 3G for many years. And the biggest MNO in china, China Mobile, which takes more than 60% of the wireless communication market, is waiting for the 3G license

1.1.2 Theoretical background
The changing environment where the organizations are operating and the market competition require the managers having perspectives on the strategic management level. The organizations’ performance measure systems are the linkage between the strategic goals and daily operations, and as what has been proved that the appropriate system can represent these abstract strategic goals.

The traditional financial based performance measure system cannot longer meet the current demand of the organizations. The traditional financial based system only could provide organizations limited information.

For one hand, those information was always focusing on historical factors which means it can only explain well in the history, but not future. This information reflected the historical performance, but they couldn’t estimate the future development and the capability of earning profits. Even we can absorbed many experience from the history and make estimation for the short-term purpose, what is more important for the organizations should be the future success, in other word, the long-term estimation.

For another hand, this information did reflect the results of the operation, but they couldn’t reflect the causal linkage between the operating process and the result.

---

2 http://wirelesswatch.jp/2006/06/19/docomo-3g-subscribers-become-majority/ 2009-02-07
In a word, the traditional financial based system could not integrate the organizations’ strategic goals and management system.

Taking all these factors into account, managers and academic researchers were searching an integrated performance measures system including both financial and non-financial factors, and that was also the initial purpose of the Balanced Score Card (BSC).

BSC consists of four perspectives, financial perspective, customer perspective, internal process, and learning and innovation. 20 to 25 key performance indicators are allocated into each of perspective. BSC solved many problems caused by the traditional financial based performance measure system, helps organizations managers to get a complete insight of the current situation. BSC can be used as a strategic tool which can translate the goals and objectives to action. It is a significant approach that helps organizations to decide and implement their strategy.

Soon after BSC was published, it was used by many organizations and governments in USA and many other developed countries. According to the Gartner Group’s investigate, by 2000, there were 40% of the top 1000 biggest companies are using the BSC in the world. *(The list of the top 1000 biggest companies was from the magazine “Fortune”)*

The first version of BSC or also called First Generation of BSC has many limitations due to its too simplistic unidirectional causality, neglect of separating cause and effect in time; vagueness links between strategy and operations. As Henk and Kim said that the success of the BSC can be explained by the right timing and marketing. BSC was promoted when most of the managers were frustrated with the financial based system. *(The list of the top 1000 biggest companies was from the magazine “Fortune”)*

From the beginning of the publication to the applications and from the “Performance measure system” to the “Strategy map”, the BSC experienced lots of changes and innovations. Strategy map made a great progress for BSC. It focuses on the causal-effect relationships among perspectives and objectives, and aligning intangible assets. Great deals of benefits were provided by strategy map: discovering objectives or KPIs; using causal-effect relationship to set targets; creating alignment around strategy; visual monitoring of strategic performance.

As strategy map were praised and adopted by many organizations, a question turned out for managers is how to effectively use this new approach to design an appropriate “strategy map” for the organization.

---

4 http://download.csdn.net/source/938650 2009-02-15
5 Henk Akkermans and Kim van Oorschot, Developing a Balanced Scorecard with System Dynamics Eindhoven University of Technology, Department of Technology Management
1.2 Problems statement

Based on both of industry and theoretical background, we propose our problems. For the purpose of design a suitable strategy map, we have to process it systematically step by step. Hereby, we brought out our problems:

1. How to construct the performance evaluation model for Mobile network operators by balanced scorecard (BSC) and key performance indicators (KPI)?
The business can be visually represented by numbers of Key Performance Indicators categorized in the four perspectives. Before we achieve the strategy map, it is necessary to know the organization’s situation. Then we need to identify objectives or KPIs for particular industry, after which we should discover the causal-effect relationship between KPIs and perspectives. In order to solve above problems, we obtain a model based on Mobile network operators industry and the model consists of four clusters KPIs by perspectives.

2. How to design strategy map?
To design an appropriate strategy map for an organization has to obey specific principles as well as meet given criteria. The organization’s strategy is probably flawed if the strategy missed any crucial element on the strategy map.

3. What strategy should China Mobile implement?
Combining the model obtained from the first problem and the achievement from the second problem, we established a strong foundation to design a strategy map for China Mobile. Furthermore, we can design a strategy for China Mobile.

1.3 Purpose of the study

Our purpose of the study can be represented by two perspectives, both theoretical purpose and the practical purpose.

Firstly, from the theoretical perspective, we plan to construct a performance evaluation model which can apply to all the Mobile Network Operators. MNOs managers can use this model to estimate the company’s achievement, situation, and discover the causal-effect relationship among objectives and perspectives.

Secondly, we want to investigate how to design an appropriate strategy map for an organization. In another word, we investigate how to use “strategy map” effectively. The contemporary research is the so called “Third Generation of BSC”.

Lastly, we help China Mobile to map its strategy. Additionally we hope this research can help senior managers in all MNOs industry to make decision of strategies.
1.4 Limitations

As a case study research, our study has many limitations.

First, although the three cases that are selected, Vodafone, Hutchison 3 and NTT DoCoMo, are typical examples, it is still difficult to say that all the phenomena in 3G market can be generalized and explained by only three cases. Furthermore, all the cases are from well-developed countries, and data from developing countries and areas are lacking. Therefore, the cases are probably not good models for China.

Second, technologies are developing very quickly at the present time, and many types of multifunction equipment can provide similar functions as 3G mobile phone. Those equipment, such as PDA and blue tooth equipment are not considered in this research. Moreover, several companies have already devoted themselves into so called “4G” technology. Because the definition and standard of 4G has not been agreed by most companies, and the development of this technology is not yet clear, it is not considered in this research as well.

Third, a new type of competitor in mobile technology makes the market more competing. This is Mobile Virtual Network Operator (MVNO), an organization which provides mobile telephony services to its customers, but does not have allocation of spectrum. They are not considered in this research because they are strongly dependent to MNOs, which have their own allocation of spectrum and infrastructures. Therefore, their business behaviors are quite different from MNOs.

Last, not all the data that we need were available during our research in the year 2008. For example, the data from 3 Hutchison in the year 2007 was not published when we were doing the research. Therefore, some of the time scales in our tables were from 2004 to 2006, while some of the time scales were from 2004 to 2007. Fortunately, the lack of the data did not influence the result very much. For another example, 3 Hutchison did not provide any data on Free Cash Flow, therefore a similar criterion, EBITDA (Earnings before interest, taxes, depreciation and amortization) instead of Free Cash Flow, is provided to get a general view on 3 Hutchison’s financial perspective. The different criteria are explained in Chapter 3.

1.5 Disposition of the thesis

A brief summary of the chapters of this thesis is presented in this section.

Chapter 1 Introduction

In this chapter the background, purpose and problems are introduced, which gives readers a brief view of the thesis.

**Chapter 2 Research methodology**
In this chapter, different research methods are introduced, and the reasons why specific methods are employed in this thesis are explained.

**Chapter 3 Theoretical framework**
In this chapter, the theories of balanced scorecard, strategy map and key performance indicators are discussed, the process to formulate a proper strategy map is presented. The practical examples for key performance indicators used in strategy map formulating are also presented.

**Chapter 4 Case study of Vodafone, 3 Hutchison and NTT DoCoMo**
In this chapter, the world’s famous 3G operators, Vodafone, 3 Hutchison and NTT DoCoMo are studied mostly from their annual report and some other scientific articles.

**Chapter 5 Case study of China Mobile**
In this chapter, China Mobile is studied and analyzed from for perspectives of BSC.

**Chapter 6 Result and conclusion**
In this chapter, the results from case studies are presented, the strategy map is formulated, and the conclusion is drawn based on the analysis. Practical recommendation is made for China Mobile.

**Appendix: Background of 3G technology and the changes 3G brings**
Several nomenclatures under 3G technologies are explained and the new features that brought about by 3G are introduced. The changes of value chain in the telecom industry are discussed.
Chapter 2 Research Methodology

2.1 Choice of the Subject

In recent years most mobile network operators are facing an embarrassing situation that Average Revenue per User (ARPU) is declining, because of severe competition within the saturated market\(^7\). However, with the development of 3G technology, almost all operators are devoting themselves into the appliance of this technology in order to increase the ARPU. Several companies, such as Vodafone, 3 Hutchison and NTT DoCoMo have made several successful attempts. The myth how they compete over other competitors is interested by many researchers.

China, as the one of the fastest growing business area, and a country which has 1/5 of the population in the whole world, has become the business focus of the world. China has the world’s largest GSM network with over 300 million subscribers\(^8\) and 3G networks are still under construction. However, compared with other world’s leading MNOs, China Mobile is still quite disadvantaged, not only in its low ARPU and low market penetration rate (300 million subscribers comparing with 1.3 billion Chinese population\(^9\)), but also in its simple products, and relatively low technology standard. However, these weaknesses make China Mobile have large space for further development and the large market potential, the fast growing economical circumstances, and strong government support are good opportunities for China Mobile. With proper strategies, China Mobile can definitely become one of the strongest MNO in the world. Furthermore, the authors come from China, and would like to apply their knowledge acquired from the master programs in Umeå University for their home country. That is why the authors choose this topic to perform the research.

The most effective way to form a suitable strategy map is to study others’ experience and find out which perspective should be improved most. Therefore the three world’s leading MNOs are selected. They are Vodafone, 3 Hutchison and NTT DoCoMo.

Why do we select the three MNOs as our comparison target? There is no doubt that there are hundreds of MNOs in the world, but we could not choose all of them in our Case study part. We considered lots of companies when we selected those MNOs, such like Deutsche Telekom, Verizon Communications, AT&T, SBS Communication, Orange, and so on. Finally, we chose following three companies for our Case Study part.

---

\(^7\) International Telecommunication Union. (2009). Measuring the Information Society: The ICT Development Index

\(^8\) [http://www.infoworld.com/article/07/01/22/HNchinamobilesubscribers_1.html](http://www.infoworld.com/article/07/01/22/HNchinamobilesubscribers_1.html) 2008-08-18

1) Vodafone
It was acknowledged the biggest MNO in the world due to the most subscribers, and Vodafone offers wireless network service in a huge range. Because China Mobile has also huge amount of subscribers, and this similarity makes Vodafone a good example for China Mobile. The strategy how Vodafone deals with the large amount of subscribers is a good reference for China Mobile.

2) 3 Hutchison
It is a part of the Hutchison Whampoa Limited, is the first international provider of 3G video mobile services. Comparing to other MNOs in Europe, furthermore, 3 Hutchison had a remarkable high ARPU compared with other MNOs. Therefore 3 Hutchison is a good model for 3G products and its increasing ARPU took much attention from the authors.

3) NTT DoCoMo
It is the biggest MNO in Japan. The development of 3G in Japan and Korea is one-upping comparing with other region. We are interested in this model, because it is the most advanced model with most advanced technology. Although Vodafone’s total failure in Japan in competition with NTT DoCoMo is also a case that we are interested in. Furthermore, NTT DoCoMO’s main market is domestic Japanese market, which is similar to China Mobile, who is focusing on China mainland, and this similarity also makes NTT DoCoMo a good example for China Mobile.

2.2 Preconceptions

In scientific researches, a researcher’s preconception, which bases on researcher’s education background, experience, interests and so on, is important to the research, because it directly influence the research’s process and result. Therefore it is necessary to introduce the authors at the beginning of the thesis, in order to give the readers sufficient information with which the thesis can be better understood and evaluated.

Both of the authors come from the capital of China, Beijing, which means the authors share same culture background, which reduces the possibility of misunderstanding concerning language and comprehension.

Both of the authors started their master programs at Umeå University in the year 2006, Lei Zhao’s major is accounting and finance, while Meng Chen’s major is marketing analysis and management. As business students with previous business-related working experience, we are able to judge the latest commercial news with a professional aspect. We have noticed the development and problems of the recent mobile network industry from respectively financial and marketing aspects, so we decide to write a master thesis to study how the operators design and market the product with the help from 3G technology, and how the optimal profit will be earned.
by the operators, which is a crosslink between marketing management and financial management.

2.3 Case Study as Research Design

According to Bryman (2007), a research design provides a framework for the collection and analysis of data. A choice of research design reflects decisions about the priority being given to a range of dimensions of the research process.10

Case study is a research design that is employed in this thesis. Case study is often referred as a research method and the definition of Case Study is often confused. Robert Yin (2002) defines that a case study is an empirical inquiry that investigates a contemporary phenomenon within it real-life context, empirically when the boundaries between phenomenon and context are not clearly evident.11 Berg (2009) defines a case study as a method involving systematically gathering enough information about a particular person, social setting, event or group to permit the researcher to effectively understand how the subject operates or functions.12 Bogdan and Biklen (2003) define case study as a detailed examination of one setting or a single subject, a single depository of documents, or one particular event.13 While Alan Bryman (2007) pointed out that case study is a research design instead of research method. He argues that a research design represents a structure that guides the execution of a research method.14 In a case study research, the selection of cases is the guideline, and when a specific case is selected, any of research methods can be used to collect and analyze data. Therefore, a case study is not a simple research method, but an all-comprising strategy that covers the logic of design, data-collection techniques, and specific approaches to data analysis.15 In other words, an in-depth examination of a case to “retain the holistic and meaningful characteristics of real-life events”16.

The reasons why we choose case study as the research design are as follows:

1) Case study is best suitable for “how” and “why” questions. The purposes of this research is to make indications for China Mobile in the future 3G market, therefore, the experiences of worlds leading MNOs, i.e. cases, should be studied and their performance should be evaluated. The evaluation of performance is quite complicated, and it concerns different perspectives, such as financial, customers, learning and innovation and so on. The research cannot be applied by simple research method, but a comprehensive research design with different research methods.

12 Bruce L. Berg (2009), Qualitative Research Methods for the Social Science, P317
13 R.C. Bogdan and S.K. Biklen, Qualitative Research for Education, 4th ed, Boston: Allyn & Bacon, P54
2) We would like to have a better investigation on Balanced Scorecard and strategy map theory for telecom market and to map the strategy for China Mobile. Only by testing the model with cases, i.e. different MNOs, we are able to evaluate their performance and find out their strengths and the background of their strengths. By comparing the three MNOs with China Mobile’s case, we can see the strengths and weaknesses of China Mobile, and with the proper analysis on the cases, a proper strategy map for China Mobile can be formulated.

3) Case studies are categorized by Robert Yin (2002) into single case studies and multiple case studies. As the name indicates, single case study focuses on only one case, and multiple case studies examine multiple cases. For our case study, multiple cases, Vodafone, 3 Hutchison, NTT DoCoMo and China Mobile, are examined, but the examinations of the cases are for one purpose: to make comparison between them and find out what are cause-effect link of different KPIs, and to formulate a specific strategy map for China Mobile.

However, there maybe several negative points using case study as research design. Champion (2006) argues that extensive large-scale survey research data may seem some what superficial in nature17. The choice of the cases may also influence the results of the research, and the results of a case study are quite specific. Alan Bryman (2007) argues that a single case cannot yield findings that can be applied more generally to other cases.18 To avoid these negative points, we made several limitations for our research (see Chapter 1.4 Limitations). Furthermore, the cases are studied for comparison, not simple data presentation. The comparison result is used to find out the cause-effect link of KPIs, and what factors should be focus on for strategy planning of MNOs, which makes that the research findings more referable for other researches.

2.4 Qualitative and Quantitative Research methods

As we mentioned in the last chapter, when the research design is chosen, different research methods can be used in data collection and analyzing. Research methods refer to systematic, focused and orderly collection of data for the purpose of obtaining information from them, to solve/answer research problems or questions19. Research methods are classified in several different ways by different scholars. However, the most popularly applied classification is quantitative and qualitative methods.

Alan Bryman (2007) defines a quantitative research is a method that emphasizes quantification in the collection an analysis of data, and a qualitative research is a

method that emphasizes words rather than quantification in the collection and analysis of data. While Mark Saunders, et al. (2007) point out that quantitative method is predominantly used as a synonym for any data collection technique or data analysis procedure that generates or uses numerical data, and that qualitative method is used predominantly as a synonym for any data collection technique or data analysis procedure that generates or uses non-numerical data.

According to Bryman (2007), quantitative research is used to test the theory, and the data is based on numerical statistics, the result can be easily generalized, but it requires large random samples for data collection. Qualitative research is used to emerge a theory, and the data is descriptive, rich and in-depth, the result is for understanding of behaviors, values, beliefs and so on.

In order to obtain an in-depth understanding of the 3G market, and to obtain a result that can be generalized, we decide to employ the combined research methods with both qualitative and quantitative research methods. The study of cases relies mostly on qualitative data. The evaluation model is mostly descriptive, and the different performances of the MNOs are presented in context. However, quantitative variables, such as ARPU, free cash flow, customer number and so on, are analyzed, which helps for easier comparison of performances. The comparison results are then referred for China mobiles strategy planning.

2.5 Data Collection

To collect information, both primary and secondary data can be used. Secondary data is the available data that have been collected by some others for other purpose, while primary data are collected by the researcher for their own purpose. In our research, secondary data are collected, mostly from written literature, scientific articles, and companies’ publications. Primary data, such as interviews and surveys, can also be collected for case study design, but in our case, they are difficult to collect because the MNOs are international companies and their strategies and behaviors may vary in different countries. Single interviews and surveys in only one country cannot indicate the companies’ strategies as in total. Therefore, the companies’ annual reports and some secondary data such as research articles written by other researchers were collected and analyzed in our study.

2.6 Scientific Approach

Generally speaking, there are two types of research approaches concerning the empirical findings and theories, deductive approach and inductive approach. By deductive approach, people develop a theory and hypothesis and design a research
strategy to test the hypothesis. By inductive approach, people collect data and develop theory as a result of the data collection. The difference between these two approaches is that deductive approach is a theory testing process when the theory already exists, and on the other hand, inductive approach is a theory establishing process. In our research, inductive approach is adopted.

First the theories of balanced scorecard and strategy map are studied, and specific KPIs for telecom industry are chosen. By evaluating the three MNOs and China Mobile, we try to find the cause-effective link of the KPIs, and finally the strategy map which is specific for China Mobile is drawn. This is a step by step theory establishing process, which belongs to inductive approach.

2.7 Validity and Reliability

According to Bryman (2009), validity is concerned with the integrity of the conclusions that are generated from a piece of research, while reliability is concerned with the question of whether the results of a study are repeatable.

During the empirical study, we tried our best to keep our research with high reliability in order to draw a proper conclusion and to make the research repeatable. During our research, most scientific articles on theories are chosen from either the database of Umeå University’s Library, or literatures collected by Umeå University’s Library. Besides, reports and articles from the internet are only selected from the official or famous websites, which ensures the reliability of the materials and sources we use. The data used for the evaluation model from Vodafone, 3 Hutchison, NTT DoCoMo and China Mobile rely mostly on the annual report from companies’ official report. Furthermore, most of the materials and sources we collected are in English, which brings no difficulty for the reader to understand.

However, as we mentioned before, the validity of case study design is in question, because case studies are quite specific and the results cannot be generalized. To keep high validity, we have chosen multiple case studies, i.e. three typical international MNOs that are active in 3G market, and compare China Mobile’s situation with three MNOs to make indications for China Mobile’s strategy planning. The comparison of more cases gives higher validity and the conclusion are specific for China Mobile. However, the research can also help other researchers to some extend, by giving a hint for how to make a strategy map with balanced scorecard, strategy map and KPI theories. Therefore, our research is an extension of the utilization of Balanced Scorecard theory and strategy map theory integrated with KPI theories, and is specific in analyzing the performance of MNOs, finding out cause-effect link of the performances, and helping the MNOs to map their strategies.

---

Chapter 3 Theoretical framework

3.1 Literature Review--the Performance Evaluation Models

In order to make evaluation for the four cases, we firstly studied several literature concerning models that can be used to evaluate corporate performance and product characteristics created by former researchers, and selected out several evaluation models of our interests.

3.1.1 The Balanced Scorecard

Historically, performance measurement systems focused on the financial measures, but more and more firms and organizations are well aware of the deficiencies of those traditional performance measurement systems, which lose sight of the non-financial measures. In this reason the financial based system can not be enough to be an effective management tool. An effective performance management system should engender strategic evolution and ensure goal congruence in the organization. The balanced scorecard focusing on both financial and non-financial vision will be ideal for performance management.

The Balanced Scorecard (BSC) is a performance measurement framework, which was first publicized by Robert S. Kaplan and David P. Norton in the articles “The balanced scorecard: measures that drive performance” in the journal “Harvard Business Review” 1992. Having realized the shortcomings of traditional management control systems, Kaplan and Norton designed the Balanced Scorecard as a result of a one-year research project involving 12 companies. Since its introduction, the Balanced Scorecard theory has been widely employed in many business areas.

3.1.1.1 Definition of the Balanced Scorecard.

After review of so many literatures, we found that many discussion and analysis were carried out basing on the question “What is Balanced Scorecard?” In another word, it means that there is not a so clearly definition for the Balanced Scorecard.

“The balanced scorecard (BSC), a performance report based on a board set of both financial and non-financial measures, is a crucial part of the firm’s effort to better understand and to implement its strategy. The BSC provides a comprehensive performance measurement tool that reflects the measure critical for the success of the firm’s strategy and thereby provides a means for aligning the performance measurement in the firm to the firm’s strategy. Thus, managers and employers within the firm have the awareness of the firm’s CSFs through the BSC and an incentive to

---

23 Yee-Ching lilian chan (2002), The benefits of balance , CMA Magagement
achieve these CSFs in moving the firm forward on its strategic goals.”24 This concept was published by Blocher, et al, in the book “Cost Management Fourth Edition” in 2008.

This is only a simple illustration of the Balanced Scorecard among so many literatures. Actually, just like others opinions, it was not a clear definition for the Balanced Scorecard. Interestingly even the authors of the BSC, Kaplan and Norton didn’t provide a clear definition of what BSC is.

In the beginning, Kaplan and Norton detailed the BSC in 1992, and the concept of BSC was based on a notion that managers need a balanced series of measures which can cover financial, process areas, customer, innovation and learning to manage effectively. The BSC was used as a tool which translates the company’s strategy and goals into a set of performance measures that were accessible. And the managers were able to use these performance measures to track short-term financial results while simultaneously supervising their progress in creating the capabilities that will generate future growth.25

Kaplan and Norton (1992) meant that the BSC can help the companies with the strategy and vision, but not the exact control at the center. The senior managers can setup the goals with BSC and also can know what the result will be, and adopt the behaviors and take actions which can achieve these goals.26

After that Kaplan and Norton carried on their research on the BSC, and then they continuously expanded it in the following documents. But they still did not provide a clear definition. Instead of that they were focusing on how the BSC could be used and how it relates to the other organizational attributes. Gavin and Ian deduced a number of attributes from Kaplan and Norton’s documents about the BSC. Gavin and Ian (2004) draw their conclusion from the Kaplan and Norton’s publications from 1992 to 1997 that the Balanced Scorecard should have these attributes:

1. Including both financial and non-financial measures.
2. Numbers of measures. But the number of the measure was changing depend on the requirement.
3. Measures can be divided into four perspectives called “Financial”, “Customer”, “Internal business process” and “Learning and Growth”.
4. Measures should reflect the strategic missions of the company or organization.
5. The causal linkage between these perspectives, and also the causality between the “performance measures” and “outcome measures”.27

26 Griffiths J December 2003 Balanced Scorecard Use in New Zealand Government Departments and Crown Entities page 70-79
The BSC consists of four perspectives, or groupings of critical success factors: (1) The financial perspective; (2) The customer perspective; (3) The internal process perspective; (4) Learning and innovation.

**The financial perspective** offers a vision for the shareholders of the company. By including this perspective it means that Kaplan and Norton have not disregard the traditional need for financial data. But also Kaplan and Norton have incorporated the financial perspective into a measurement and strategy model which involve a more complete vision of the company’s business strategies. The financial perspective represents the long-term strategic objectives of the company. In 1996 Kaplan and Norton described three possible stages which are rapid growth, sustain and harvest. For the growth stage the financial measures will be relative with the development and growth of the company which will include the increased sales volumes, numbers of the new customers, and growth in revenues and so on. The measures in the sustain stage will focus on evaluating the effectiveness of the company to manage its operations and costs. The indicator such as return on investment, the return on capital will be involved. In the harvest stage, it will be based on cash flow analysis with measures like revenue volume. The most common financial measures in this perspective are economic value adding, profit margins, operating income, costs etc.28

**The customer perspective** represents what is the customers’ impression of the company. Kaplan and Norton said that, “to put the balanced scorecard to work, companies should articulate goals for time, quality, and performance service and then translate these goals into specific measures.” Nowadays this perspective is commonly considered as a “customer resource management”, and lots of CRM systems were developed. But the first shot of the CRM was deployed almost in the same period with the BSC in the early 1990s.29 In this perspective, the measures should contain the two aspects: one is that products or services being delivered to the customers, which involve time, quality, service and cost. Another aspect is the outcomes such as the customer’s satisfaction, market share, customer’s loyalty.

**The internal process perspective** was recognized by many literatures as that it could provide a view of what a company must be good at to be competitive. This perspective is focus on translating the customer-based measures into measures which can reflect the company’s internal operations. Many short-term and long-term objectives were set up for the purpose of stimulating improvement. Kaplan and Norton said that: “companies also attempt to identify and measure their company’s core competencies, the critical technologies needed to ensure continued market leadership.”30

---

29 Douglas Scherer, Overview of the Balanced Scorecard, June 17, 2002
30 Douglas Scherer, Overview of the Balanced Scorecard, June 17, 2002
The learning and growth perspective is the foundation of any strategy and this perspective is focusing on the intangible assets of the company, mainly on the internal skills and capabilities that can create value. Kaplan and Norton insist that the company’s ability to innovate, improve and learn will contribute directly to the company’s value. “The learning and growth perspective is concerned with the jobs (human capital), the systems (information capital), and the climate (organization capital) of the enterprise.”31 Kaplan and Norton explained that the infrastructure is necessary to enable ambitious objectives in the other three perspectives to be achieved. And it is maybe a long-term process, because an improvement in the learning and growth perspective will require certain expenditures that may decrease short-term financial results, whilst contributing to long-term success.32

![Fig 3.1 Four Perspectives of BSC](image)

How to use these four perspectives are not mandatory, and it is the need to establish measure based on the companies’ strategies. And due to this reason, a company should modify the Kaplan and Norton model to reflect unique characteristics of the company, such as cultural aspects, strategic planning horizon and the nature of operations.33

3.1.1.2 The development of the Balanced Scorecard.

After the first publication of the Balanced Scorecard in 1992, Kaplan and Norton continued to work on the development of the Balanced Scorecard. Integrating with these companies and organizations, Kaplan and Norton carried on working the implement and refine the BSC.

From the beginning of the BSC, choosing the measures for the companies and organizations was a critical part in this method. But the problem is that how to choose the measures. From the practical experience of the implement, the difficulties and failures were discovered. One failure was that companies and organizations typically chose too many measures and some of them were not necessary for implement the BSC. And another difficulty was how to decide which measure should be distributed into which perspective.

In the beginning of the BSC were published, Kaplan and Norton did not said many details about how to design the BSC. And soon, these failures and difficulties were recognized by Kaplan and Norton and also some other researchers. 1993, Kaplan and Norton published their article “Putting the Balanced Scorecard to Work” on the Harvard Business Review and in 1996 they released “Linking the Balanced Scorecard to Strategy” on California Management Review. Kind of approaches of how to design a BSC were detailed in these articles. And also the BSC was refined more emphasis on the strategic management tool rather than around performance measurement. Simultaneously, a number of articles and papers based on “how to design the BSC” were turned out by several authors.

“The fact that such instructional texts are still being published hints at a failure to find a solution, but these were helpful in setting out a wider project plan, and they are light on the detail about how the design choices would actually be made.” (By Gavin and Lan 2004).34 Additionally, Gavin and Lan defined the BSC during this period as the First Generation Balanced Scorecard.

3.1.1.3 Innovation of the BSC: Strategy Map

After 10 years since the Balanced Scorecard was introduced, Kaplan and Norton published the “The strategy focused organization” in 2001, and in this article they transformed the BSC from a system to measure performance to a strategic management system. Two significant enhancements were displayed in this new research. One was that “measures were chosen to relate to specific strategic objectives, and the purpose of the design the BSC was to identify about 20-25 strategic objectives each combined with one or more measures. These measures were assigned to corresponding perspectives.” Another enhancement was the visual causal linkage between strategic objectives which was called “strategic linkage model”, and now the

more commonly called “strategy map”\textsuperscript{35}

![Strategy Map Diagram]

**Fig 3.2 The Strategy Map**

### 3.1.1.4 Principles of Strategy Map

To facilitate the linkages among the four balanced scorecard perspectives and improve the efficiency of causal chains, strategy maps were introduced as a further step after BSC. The strategy map template showed in Figure can serve as a checklist. The organization’s strategy possibly is deficient if it missed an element in the strategy map template. If some of crucial element was missed, the organization assumably has no connection between internal process measures and a customer value proposition, or

has no objectives for innovation; therefore the strategy could be distorted.

**The strategy map should be based on five principles**\(^{36}\):

1. **Strategy balances contradictory forces.** Long-term goals usually conflict with some short-term goals. Short-term goals can always be achieved by sacrificing long-term investments. The strategy has to balance and articulate the short-term financial objectives like reducing costs with the long-term goals like sustainable income.

2. **Strategy is based on a differentiated customer value proposition.** Customers’ satisfaction is the source of sustainable value creation. Strategy should be based on targeted customers. Strategy is required to attract and retain targeted customers.

3. **Value is created through internal business processes.** Internal processes were classified into four clusters:
   - Operations management: producing and delivering products and services to customers
   - Customer management: establishing and leveraging relationships with customers
   - Innovation: developing new products, services, and relationships
   - Regulatory and social: meeting or exceeding regulatory and societal expectations, and building stronger communities.

   All of targets in financial and customers perspective described in strategy map were outcomes which the organization hopes to achieve: improve productivity and revenue growth, increase shareholder value; increase customers’ acquisition, satisfaction, loyalty, retention and growth. Internal processes and learning and growth drive the strategy, and they will facilitate organization to achieve its targets.

4. **Strategy consists of simultaneous, complementary themes.** Not all clusters of internal processes deliver value in the same time, actually every cluster has different points in time. For instance, cost reduction or quality enhancement can result improvements in operational processes in a short time, but an enhanced customer relationship influences the outcomes in about half year or one year after the initial investment. And the benefits from enhanced regulatory and social processes come out even further in the future. Strategies should incorporate one strategic theme with each of the four clusters, and strategies should be balanced.

5. **Strategic alignment determines the value of intangible assets.** In strategy map, intangible assets are classified into three categories:
   - **Human capital:** generally it means people. As with any investment, people are assets whose value can be enhanced by investment. The availability of skills, talent, and know-how to perform activities can contribute to organizations benefit, which also required by the strategy.
   - **Information capital:** information systems and knowledge applications and infrastructure are required to support the strategy.
   - **Organization capital:** culture; leadership; alignment and teamwork.

---

\(^{36}\) Kaplan and Norton, Strategy map: guide to aligning intangible assets. 2004, page 11-13
4.1.1.5 Design Strategy Map step by step
Comparing to the first vision of the BSC, the strategy map indeed supplies many gaps. As we mentioned before, Henk and Kim summarized the limitations of BSC. Its “insufficient links between strategy and operations”, “too simplistic causality”, “does not separate cause and effect in time” and so on. Strategy map made a great deal of promotion on those areas.
The so called first generation of BSC broken new ground by combining financial and non-financial performance measures classified into four perspectives\(^{37}\), but it was not reliable or sufficient to design the organizations strategies due to its limitations. The strategy map focus on strategy and vision, and offers managers an internal insight of organization. By strategy map, managers can easily know how to achieve organizations mission and goals by causal-effect chains of continuous improvements. It is well employed by commercial business, nonprofit organizations and also governmental organizations. After organizations had decided to install BSC or strategy map as the main management approach, the crucial problem emerged for managers is how to use it efficiently to design a characteristic strategy map.
To find solution for the problem how to use BSC to design strategy, many researchers were involved in this field. A very popular theme is “use the creation of destination statement as the starting point for choosing strategic objectives, measurement and target”,\(^{38}\) which is so called “The third Generation of BSC”.
The common principle of many solutions is to design strategy map systemically and scientifically.

**Design BSC strategy map step by step:**
Before we design a strategy map, we need to think about what is a good strategy map, in another word, what are criteria for a good strategy map. Hereby, Dr. Nihal M. Nounou pointed out three elementary criteria for a good strategy map.\(^{39}\)

**Criteria one:** right set of objectives. Objectives or KPIs should match with selected strategy time frame, approved budget, and assigned set of measure, the level which organization focus on. Additionally, numbers of KPIs should be in 20 to 25.

**Criteria two:** primary cause and effect relationship should be distinguished from second degree relationships. The strength of primary cause and effect relationship can be validated during performance monitoring.

**Criteria three:** keep evolving. Cause and effect relationship should be easily tracked and adjusted on time, which makes strategy maps dynamic by validation and refinement.

Following the five principles which strategy map are based on, and satisfying the
three criteria, we can safely dispose the process by the following steps:

Fig 3.3 The Process of Designing a Strategy Map

The first step as we defined “ascertain the current situation of the organization” is a prerequisite to strategy formulation. We must design our strategy map based on a good understanding of current situation; additionally having a good forecast about the future events is also an important prerequisite. A reasonable SWOT analyses, a complete marketing survey, or a benchmarking with other competitors in the same industry can apply to this step.

If we check the strategy map in Fig 4.4 The strategy map, the long-term shareholder value, productivity strategy and growth strategy stand on the highest level, or level-1, so called strategic destination and strategy themes.

For instance, the human capital, information capital and organization capital in learning and growth perspective are called perspective themes, or level-2. Taking the customer perspective as an example, the price, quality, availability and so on is objective, or KPI, belonging to level-3. The arrows between two perspectives illustrate the causal-effect relationship between two actions. For particular organization, some KPIs in level-3 could have several sub-KPI. When it is necessary,
KPIs or objectives can even extension to level-4 or level-5. But as we mentioned before, it was not encouraged to have more than 25 KPIs in the strategy map.

3.1.2 Key Performance Indicator, KPI

Definition of Key Performance Indicators
Key Performance Indicators, also known as KPI or Key Success Indicators (KSI), help an organization define and measure progress toward organizational goals. After an organization has identified the market, analyzed the missions and set up their goals, it needs a measurement to evaluate the progress towards the goals. KPIs are the measurements to that.

Key Performance Indicators reflect the critical success factors, stakeholder needs, and the expectations of the organization. Both financial and non-financial metrics can be applied in KPIs.

KPIs are different among different organizations. For example, a school may have graduation rate as its KPI while a telecom company may have annual revenue and amount of subscribers as its KPIs. The selection of Key Performance Indicators depends on if they can reflect the organization’s goals. As the examples show, the high graduation rate is the school’s goal, and the high revenue and large amount of subscribers are the telecom company’s goal. KPIs are usually long-term considerations. The definition of what they are and how they are measured do not change often. The goals for a particular Key Performance Indicator may change as the organization's goals change, or as it gets closer to achieving a goal.

In combination with BSC
To make evaluations and strategy map of a company, Balanced Score Card is popularly applied among world’s leading enterprises, as we have already discussed in former chapters. In BSC there are four perspectives, 1) The financial perspective; 2) The customer perspective; 3) The internal process perspective; 4) Learning and innovation. Under these perspectives, people have to define several specific metrics or indicators that can describe the organization performance within these four perspectives. However, the limitation is that the metrics cannot indicate the whole company, and therefore, the selection of the indicators becomes important when the performance of an organization is being benchmarked. KPIs, which play important role in every perspective, are therefore selected to indicate the strategy map.

40 F. John Reh, Key Performance Indicators (KPI), http://management.about.com/cs/generalmanagement/a/keyperfindic.htm 2008-05-14
41 Larry Cooper, CSF’s, KPI’s, Metrics, Outcomes and Benefits, http://www.itsmsolutions.com/newsletters/DJTYvol2iss40.htm#_ftnref1 2008-08-08
42 F. John Reh, Key Performance Indicators (KPI), http://management.about.com/cs/generalmanagement/a/keyperfindic.htm 2008-05-14
As Robert S. Kaplan, the founder of BSC, mentioned in his book “The Balanced Scorecard: Translating Strategy Into Action”, BSC are supposed to be “the flight deck of an aircraft”, the pilot have to concentrate on the balance of several perspectives, for example, “airspeed, altitude and fuel” to orient the aircraft fly towards a right direction\(^{43}\), and in fact, “airspeed, altitude and fuel” are KPIs under different categories on the flight deck. Without the flight deck, the situation of airspeed, altitude and fuel cannot be visualized in time, so the aircraft cannot be controlled to get to the target properly. That is why BSC is very important to the organization strategy map. In short, BSC is the orientation method for the strategy, which leads the organization to do the proper things. However, KPIs are the specific perspectives in achieving the goals, which are the proper things to do. They must be well combined to achieve the best outcome.

### Identify KPIs

One crucial step in developing and using an efficient BSC and strategy map is identifying Key Performance Indicators. Organizations managers have to indentify lead and lag KPIs which contribute to achieving strategic goals.

The financial KPIs are usually not driving the organization to its strategic goals, but more are results and lagged indicators that focused on what was achieved from the business process. Financial KPIs are more used in planning and control. Actually the nonfinancial KPIs drive the financial KPIs and the outcomes.\(^{44}\)

Identifying KPIs is a complicated process, and when managers identify KPIs, they should look forward rather than look back until the year is over. Every process in the organization will generate measures, and most of them are nonfinancial measure. All of those measures can provide information, but not all of them can be put a hat of “Key”. They are performance measures, but maybe not Key Performance measures. Key performance indicators are performance indicators which are aligned with the organizations’ strategy, clearly impact other measures, and lead to increased future revenue.\(^{45}\)

Furthermore, this notion implicates that Key performance indicators could vary depending on organizations strategies’ changes. Managers should identify again when the strategy changed. Key Performance Indicators in the strategy map should be update immediately according to strategy.

KPIs in different industry are also different from individual to individual, depending on their priorities or performance criteria.

\(^{44}\) Racing to Success by Identifying Key Performance Drivers Authors: Kathy A. Paulson Gjerde and Susan B. Hughes
\(^{45}\) Racing to Success by Identifying Key Performance Drivers Authors: Kathy A. Paulson Gjerde and Susan B. Hughes
This is an example on different KPIs in four different industries.

KPIs that are selected for BSC must be effective. The golden rules when people define the KPIs can be abbreviated as SMART:

**Specific:** KPI should be of a specific value. “To gain high graduation rate” or “to generate many new subscribers” is worthless to the school and the telecom company, but some specific values, for example, graduation rate of 80%. We should also make sure that different users understand it in the same way and therefore come to the same conclusions.

---

Measurable: KPI values should be measurable and comparable, by defining a standard value, and therefore the performance of the organization can be evaluated or comparable with their competitors.

Achievable: KPI should be achievable. It is meaningless to set up a goal that cannot be achieved.

Relevant: KPI should be relevant to the organization performance and strategy

Time phased: KPI should be time phased and should also be defined and stay with the same definition in a long term. Therefore, the increase of decrease of the value in the phased time will indicate the performance of the organization. 47

3.2 Practical KPIs for MNOs

In this chapter we give several examples of KPIs which are specified for the MNOs’ strategy map formulation. In practical cases, not all these KPIs are used, or several other KPIs can also be used. The basic principle is that the KPIs should be suitable for the strategy, and easy to acquire.

3.2.1 The financial perspective

Most of the Financial Performance measures are commonly used by all the industries, but the key performance measures in financial perspective are vary depending on different industries’ features, Managers in different industries have a preference of some performance measures over others. Hereby we list and interpret performance measures applied to MNO industry.

-Operating revenue

  Operating income = operating revenue – operating expenses48

The following revenue measures are also frequently used by MNOs

  Revenue per voice-minute
  Percentage of non-voice revenue
  Minutes of usage (MOU) per subscriber
  Average revenue per subscriber (ARPS)

-ARPU average revenue per user or average revenue per unit

ARPU is commonly calculated in standard mathematical fashion, by dividing the aggregate amount of revenue by the total number of users who provide that revenue.49

The company that tracks ARPU will most likely want to know its profit potential in broad terms. However, mobile phone companies also track ARPU by examining

49 http://www.wisegeek.com/what-is-arpu.htm 2008-07-21
revenues brought in by customers’ incoming calls as compared to revenues generated by monthly or annual fees. In this way, ARPU can be both general and specific.\textsuperscript{50} We can give expression to ARPU as the formula:

\[
\text{ARPU} = \frac{\text{aggregate amount of revenue}}{\text{total number of subscribers}}\textsuperscript{51}
\]

And we always like to calculate it by \textit{month}. Several other types of ARPUs are commonly used by MNOs like \textit{Prepaid ARPU}, or \textit{ARPU from contracts}.

\textbf{-Free cash flow:}

Free cash flow is a significant financial performance measure which can be calculated as

\[
\text{Free cash flow} = \text{Operating cash flow} - \text{capital expenditures}\textsuperscript{52}
\]

Free cash flow (FCF) represents the cash that a company is able to generate after laying out the money which was required to maintain or expend its asset base. It means the ability of the company to develop new products, make acquisitions, pay dividends and reduce the debt, which also means the possibility of the company to pursue opportunities that can increase shareholder’s value. And the more official formula calculates it as:

\[
\text{Net Income} + \text{Amortization/Depreciation} - \text{Changes in Working Capital} - \text{Capital Expenditures} = \text{Free Cash Flow}\textsuperscript{53}
\]

From the shareholders and debt holders’ perspective, free cash flow can also be represented as:

\[
\text{Free Cash Flow} = \text{Net dividends to shareholders} + \text{Net payment to debtholders and issuers}\textsuperscript{54}
\]

\textbf{-EBITDA: Earnings before interest, taxes, depreciation and amortization}

An indicator of a company's financial performance which is calculated as follows:

\[
\text{EBITDA} = \text{Operating Revenue} - \text{Operating Expenses} + \text{Other Revenue}\textsuperscript{55}
\]

EBITDA can be used to analyze and compare profitability between companies and industries because it eliminates the effects of financing and accounting decisions. However, this is a non-GAAP measure that can be used to evaluate a company’s profitability. EBITDA can be a good metric to evaluate profitability, but not cash flow. EBITDA also leaves out the cash required in working capital and the replacement of old equipment, which can be significant. Consequently, EBITDA is often calculated as a company’s wish. When the company is using this metric, it's important for investors also check other performance measures to make sure the company did not hide something with EBITDA\textsuperscript{55}.

\textbf{-Residual earning or Residual income}

\textsuperscript{50} [http://www.wisegeek.com/what-is-arpu.htm 2008-07-21]
\textsuperscript{51} [http://www.wisegeek.com/what-is-arpu.htm 2008-07-21]
\textsuperscript{53} [http://www.investopedia.com/terms/f/freecashflow.asp 2009-02-08]
\textsuperscript{55} [http://www.investopedia.com/terms/e/ebitda.asp 2009-02-08]
Residual earning = Earnings – (Required return × Investment)
Residual earning is sometimes referred to as abnormal earning or excess profit. If the company generates positive residual earnings, there is value added.\(^{56}\)

-ROCE, Return on common equity,
  \[ \text{ROCE} = \frac{\text{Comprehensive earnings to common}}{\text{Book value}} \]
Comprehensive earnings to common are after preferred dividends. Book value is the book value of common shareholder’s equity. \(^{57}\)
Alternative is ROE, which is return on equity.

-EPS, DPS, BPS
**EPS Earnings Per Share:** The portion of a company's profit allocated to each outstanding share of common stock which is commonly used as a indicator of a company's profitability.\(^{58}\) Calculated as:
\[
\text{EPS} = \frac{\text{Net income} - \text{Dividends on Preferred stock}}{\text{Average outstanding Shares}}
\]
**BPS is Book value per share, relative the EPS.**
**DPS Dividend Per Share:** The the sum of declared dividends for every ordinary share issued. Dividend per share (DPS) is the total dividends paid out over an entire year (including interim dividends but not including special dividends) divided by the number of outstanding ordinary shares issued.\(^{59}\) DPS can be calculated as:
\[
\text{DPS} = \frac{\text{Sum of dividends over a period} - \text{Special dividends}}{\text{Shares outstanding for the period}}
\]

**Growth rate of CSE**
The rate of growth of owners’ equity from both sources: new shareholder financing and business activities.

\[
\text{Growth rate of CSE} = \frac{\text{Change in CSE}}{\text{Beginning CSE}} = \frac{\text{Comprehensive income} + \text{Net transactions with shareholders}}{\text{Beginning CSE}}
\]
\[
= \text{ROCE} + \text{Net investment rate}
\]
Comparing with ROCE which is the focus for the analysis of profitability, Growth in CSE more focus for the analysis of growth.\(^{60}\)

### 3.2.2 Customer Perspective

-**Number of Subscribers**
Number of subscribers can not only show the MNOs’ market share and growth in market share, but also can show the customer satisfaction. Because nowadays there are always several MNOs launched the service in the same country. If the customers


\(^{58}\) http://www.investopedia.com/terms/e/eps.asp

\(^{59}\) http://www.investopedia.com/terms/d/dividend-per-share.asp

do not satisfy the service which was offered by the MNO, they can easily change to another. So in this way the number of subscribers also shows the capability that the MNOs can keep or attract the customers by offering better products and services.

-Penetration Rate
Penetration rate is a measurement that indicates the company’s occupancy of the market. The larger penetration rate, the larger market the company shares. However, from another point of view, it also indicates the market development potential. The smaller penetration rate indicates the larger development space in the market.

-Average Minutes of Usage per User per Month (MOU)
MOU indicates the average length of time that the subscriber uses the voice service from the MNO. Voice service is the basic service that an MNO provides, and long MOU indicates the high quality of voice service network, and subscriber’s high satisfaction to the voice service. This indicator also indirectly shows the loyalty of the customers.

-ARPU per high-end/low-end subscribers
This indicator demonstrates the different profit the MNO can earn from high-end users (usually contract subscribers) and low end users (usually prepaid subscribers). The MNO should adapt their target market strategies according to the difference, in order to maximize the profit.

-Overall Customer Satisfaction Rate
This indicator indicates the overall satisfaction of the customers, and the number is acquired by either MNO’s own market investigation or surveys from a third party.

-Number of complains received
This will help the MNO improve the service quality according to the complains in different fields.

-Customers’ churn rate
Churn rate is the proportion of customers that leaves the MNO during a certain period of time (usually one year). This indicates the ability of the MNO to retain the customers, and reflects the customer satisfaction to the MNO.

3.2.3 Learning & Innovation Perspective

-Average operating expense per user per month
In contrast to ARPU, this indicator indicates the average operating expense per user. It reflects the ability of the MNO to utilize the innovations in either technology or management to decrease the expense.

-Number of Patent Applications Submitted
This indicator reflects the MNO’s innovatory ability

- **Product designing**
The new product designing ability indicates also the MNO’s innovatory ability

- **Corporate Culture**
Corporate culture is the foundation of an enterprise’s innovation. A good corporate culture will stimulate the personnel’s activity within the corporate, and improve the efficiency and innovatory ability.

### 3.2.4 Internal Perspective

In this perspective, all indicators reflect the internal management on the other three perspectives, i.e. financial, customer and innovation perspectives, and social relationship management.

- **Expense on personnel**
- **Expense on marketing**
- **Expense on customer relationship**
- **Expense on research and Development**
- **Distribution channels**
- **Social responsibility**

### 3.2.5 External Factors (optional)

Except the four perspectives, several external factors can also influence the company’s strategy, for example, the economical situation of the country, the government’s control on the market, cultural difference and so on. When formulating the strategy maps, these factors should also be considered.
Chapter 4 Case study Vodafone, 3 Hutchison and NTT DoCoMo

From this chapter we start our Case study which includes three leading MNOs: Vodafone, 3 Hutchison, and NTT DoCoMo. There are many different data and figures involved in the Case study Chapters. We would like to declare that all the data provided are from the following annual reports:


Some of the information, such as the introduction of the companies, and the strategies of companies, come from their official websites.

4.1 Vodafone

4.1.1 Introduction to Vodafone

It is no doubt that Vodafone is the world leading mobile network operator, and for a long time people always thinking Vodafone is the biggest MNO in the world thanks to the most subscribers comparing with others MNOs until 2007 when China Mobile took Vodafone’s first place in number of subscribers.61

Vodafone is offering services in Europe, the Middle East, Africa, Asia Pacific and the United States, and at 31 December 2007, based on the registered customers of mobile telecommunications ventures in which it had ownership interests at that date, the Group had 252 million customers. (Data from the Vodafone’s home page)

As we mentioned before, from a few years ago almost all the big MNOs’ ARPU were declining due to the fierce competition and the mature of the market. Depending on this situation, the MNOs began to search a new way to move up the ARPU and the service revenue, and they focused on the kinds of Data transfer services and began a new round of competition around 3G. In November 2004, the Group launched Vodafone live! With 3G across 13 markets. Vodafone live! With 3G customers can now experience news broadcasts, sports highlights, music videos, movie trailers and a host of other video content at a quality approaching that of digital television. The 3G service also supports full track music downloads which allow customers to use their phone to listen to music, choosing from a range that currently includes over 500,000 music tracks. Using the 3G service, customers can also download live performance videos and stream clips direct to their mobiles through Vodafone’s agreement with

61 China Mobile’s official website: http://www.chinamobileltd.com/about.php?menu=1 2008-08-16
4.1.2 Data Analysis

Service Revenue

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2006</th>
<th>2005</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>£ M</td>
<td>£ M</td>
<td>£ M</td>
<td>£ M</td>
</tr>
<tr>
<td>Voice Services</td>
<td>22,376</td>
<td>21,405</td>
<td>19,782</td>
<td>19,206</td>
</tr>
<tr>
<td>Change %</td>
<td>4.5%</td>
<td>8.2%</td>
<td>2.7%</td>
<td></td>
</tr>
<tr>
<td>Non-Voice Services</td>
<td>6,495</td>
<td>5,677</td>
<td>4,696</td>
<td>4,269</td>
</tr>
<tr>
<td>Change %</td>
<td>14.4%</td>
<td>20.9%</td>
<td>9.5%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>28,871</td>
<td>27,082</td>
<td>24,478</td>
<td>23,475</td>
</tr>
<tr>
<td>Change %</td>
<td>6.6%</td>
<td>10.6%</td>
<td>4.3%</td>
<td></td>
</tr>
</tbody>
</table>

Fig 4.1 Operating Revenue of Vodafone from 2004 to 2007

From the figure above, we can see that the revenue of the Voice Service is still the main part of the total revenue and increasing year by year, but it is growing slowly. The Non-voice Service is increasing in a much higher speed, although it is only a small part of the total revenue.

Registered 3G devices

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2006</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15.9 million</td>
<td>7.4 million</td>
<td>1.6 million</td>
</tr>
</tbody>
</table>

Fig 4.2 Registered 3G Subscribers of Vodafone from 2005 to 2007

This is a group of numbers which is really surprising. We can see the huge growth of the 3G devices, and this is also the basic step to launch the whole 3G service. The growth of registered 3G devices can really encourage the Vodafone to expand its business. We also can see the huge potential in this area.

VODAFONE Free Cash Flow in Millions GBP

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2006</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6,127</td>
<td>6,418</td>
<td>6,592</td>
</tr>
</tbody>
</table>

Fig 4.3 FCF of Vodafone from 2005 to 2007

ARPU

<table>
<thead>
<tr>
<th></th>
<th>Germany €</th>
<th>Italy €</th>
<th>Spain €</th>
<th>UK £</th>
<th>Japan ¥</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>21.2</td>
<td>25.9</td>
<td>35.2</td>
<td>23.6</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>23.3</td>
<td>28.5</td>
<td>35.6</td>
<td>24.0</td>
<td></td>
</tr>
</tbody>
</table>
Fig 4.4 ARPU of Vodafone from 2004 to 2007

According to the ARPU figure above from 2004 when Vodafone live! With 3G was launched to the 2007, Vodafone Group had to face the factor which really embarrassed them is that: the ARPU was still declining. It also means that the Vodafone live! With 3G did not offset the declining ARPU as we expected.

4.1.3 Case in Japan

<table>
<thead>
<tr>
<th></th>
<th>Germany</th>
<th>Italy</th>
<th>Spain</th>
<th>UK</th>
<th>Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voice Services</td>
<td>2%</td>
<td>4%</td>
<td>17%</td>
<td>4%</td>
<td>(8%)</td>
</tr>
<tr>
<td>Change %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Voice Services</td>
<td>7%</td>
<td>17%</td>
<td>44%</td>
<td>23%</td>
<td>(11%)</td>
</tr>
<tr>
<td>Change %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Change %</td>
<td>3%</td>
<td>6%</td>
<td>20%</td>
<td>7%</td>
<td>(5%)</td>
</tr>
</tbody>
</table>

Fig 4.5 2005 Compare to 2004 of Vodafone

In the main countries in Europe, like Germany, Italy, Spain, UK, the service revenue continually grew, both in Voice and Non-Voice. And as we see, the service revenues are following the whole trend which we showed before that slow growth in Voice service and fast growth in Non-Voice Service.

But Japan is a special market for Vodafone. Local currency turnover for the year 2005 fell marginally compared to the year 2004, with an 8% decrease in Voice Service, 11% decrease in Non-Voice and 5% decrease in total service revenue. Service revenue declined following a reduction in ARPU.

In the Annual Report 2004, “The average customer base grew 4% over the financial year, although market share declined from 18.4% at 31 March 2004 to 17.3% at 31 March 2005.

By 31 March 2005, Vodafone had 798,000 devices registered to use 3G data services in Japan.”

The number of subscribers and the registered 3G devices were increasing, but the service revenue and the ARPU were decreasing. It was because that Vodafone in Japan was losing the high value users, and only the low-end users were playing the
increasing part.

In Japan the 3G market was well-developed while the market in Europe was not. NTT DoCoMo, the biggest MNO in Japan launched the first 3G service, and after many years developing, it offers higher level 3G services than other MNOs. About more information please check the Chapter 6 Case Study NTT DoCoMo.

It was really not a good choice for Vodafone expanding to Japan market. Finally, Vodafone sold its Japanese business on 17 March 2006 and quit from Japan.

4.1.4 Summary

Base on all the factors displayed, we safely draw the conclusion as that although Vodafone got the increasing service revenue both in Voice Service and Non-Voice Service, they still could not offset the low and declining ARPU. The increasing service revenue was mainly from its expending to the new market and the new subscribers which also was the main CSF. About launching 3G service, we don’t think Vodafone did a good job.

4.2 3 Hutchison

4.2.1 Introduction of 3 Hutchison

Hutchison Whampoa Limited is the first international provider of 3G video mobile services under the “3” brand and an early adopter of the latest and most promising mobile phone technology. While other operators were rolling their 3G mobile services in late 2004, 3 had been successfully operating 3G networks and equipment in Australia, Austria, Denmark, Hong Kong, Ireland, Israel, Italy, Sweden and the United Kingdom since early 2003. They were also the first operator in Hong Kong to introduce 3G video mobile services in January 2004. (To avoid the misunderstanding here we use the “3 Hutchison” instead of the brand name “3”). (HWL’s home page)

3 Hutchison entered into the European market offering low service prices which attracted a huge number of customers. This strategy really disarranged the European market and made many MNOs nervous. But the low prices didn’t result in a low ARPU, and by contraries 3 Hutchison’s ARPU is much higher than the average level in Europe.

3 Hutchison’s 3G services are seemed more colorful than the others’. Besides the common services like Music, Video, Multimedia Content, Game, E-mail and Internet and so on, 3 Hutchison also offers some special services. In Sweden, for example, offerings were launched to further facilitate the usage of locally tailored content on a recurring subscription basis. With these various content offerings, customers can
access the latest content from MTV, receive golf lessons, access sports statistics and interviews from Aftonbladet, and receive domestic and international news from TT and Reuters. (Annual report 2004 page 54)

4.2.2 Data analysis

Service Revenue

![Graph showing 3 Group's Total Revenue from 2004 to 2006](image)

**Fig 4.6 Operating Revenue of 3 Hutchison from 2004 to 2006**

From these figures we can see the huge growth in 3 Group’s total revenue. The revenue in 2004 was 15,742 millions HK$, and in 2005 was 37,502. The growth rate was 138%.

According to the Annual Report 2006, during the year 2006, the 3 Group continued to move up the number of subscribers and increase revenue and reduce operating losses and cash outflows by focusing on the acquisition and retention of higher-value contract customers, reducing churn and offering new higher-margin value-added services to maintain their 3G market leading positions.

In 2006 the revenue was 50,668 millions HK$, a 35% increase from the year 2005. Comparing with Vodafone, 3 Hutchison’s revenue grew faster than Vodafone.

Registered 3G customers
The number of registered 3G customers also had a fast growth. But it seems like slower than Vodafone’s growth in this sector.

Let’s combine the two kind’s figures together, we can roughly say that 3 Hutchison got more high-value subscribers than Vodafone because that 3 Hutchison had lower speed growth in the number of customers but had faster growth in revenue.

But we can not draw a conclusion safely, and we need more evidence to prove that. Let’s go on the ARPU analysis.

### ARPU

<table>
<thead>
<tr>
<th>Year</th>
<th>Italy</th>
<th>Austria</th>
<th>Sweden &amp; Denmark</th>
<th>UK</th>
<th>Australia</th>
<th>Total average (HK$ / €)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>464</td>
<td>611</td>
<td>430</td>
<td>578</td>
<td>507</td>
<td>515 / €53</td>
</tr>
<tr>
<td>2005</td>
<td>335</td>
<td>520</td>
<td>398</td>
<td>486</td>
<td>463</td>
<td>406 / €42</td>
</tr>
<tr>
<td>2006</td>
<td>332</td>
<td>501</td>
<td>430</td>
<td>670</td>
<td>413</td>
<td>447 / €45</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>% variance compared with last year</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>-</td>
</tr>
<tr>
<td>2005</td>
<td>-28% -15% -7% -16% -9% -21%</td>
</tr>
<tr>
<td>2006</td>
<td>-1% -4% +8% +38% -11% +8%</td>
</tr>
</tbody>
</table>
ARPU(HK$) / %ARPU

<table>
<thead>
<tr>
<th></th>
<th>Italy</th>
<th>Austria</th>
<th>Sweden &amp; Danmark</th>
<th>UK</th>
<th>Australia</th>
<th>Average % ARPU</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>107 / 23%</td>
<td>63 / 12%</td>
<td>60 / 14%</td>
<td>116 / 20%</td>
<td>127 / 13%</td>
<td>20%</td>
</tr>
<tr>
<td>2005</td>
<td>99 / 30%</td>
<td>73 / 14%</td>
<td>62 / 16%</td>
<td>113 / 23%</td>
<td>110 / 24%</td>
<td>25%</td>
</tr>
<tr>
<td>2006</td>
<td>116 / 35%</td>
<td>92 / 18%</td>
<td>89 / 21%</td>
<td>193 / 29%</td>
<td>101 / 24%</td>
<td>30%</td>
</tr>
</tbody>
</table>

Non-voice ARPU for Non-voice and Voice service (HK$)

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>357 / 77%</td>
<td>370 / 86%</td>
<td>341 / 79%</td>
</tr>
<tr>
<td>Voice</td>
<td>548 / 88%</td>
<td>447 / 86%</td>
<td>409 / 82%</td>
</tr>
</tbody>
</table>

ARPU(HK$) / %ARPU

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>462 / 80%</td>
<td>373 / 77%</td>
<td>477 / 71%</td>
</tr>
<tr>
<td>Voice</td>
<td>380 / 87%</td>
<td>353 / 76%</td>
<td>312 / 76%</td>
</tr>
</tbody>
</table>

Fig 4.8 ARPU of 3 Hutchison from 2004 to 2006

From these figures, we can see that ARPU from the year 2004 to 2005 there are a decrease, but the year 2006 ARPU got an increase.

The voice service revenue still was the majority of the total ARPU, but this revenue was decreasing year by year. The Non-voice service revenue took more and more part in the total ARPU.

Although 3 Hutchison had a declining ARPU in 2005, they turned it in 2006.

3 Hutchison ranges of value-added services have become increasingly popular with their customers and non-voice service revenues are expected to be further enhanced with the launched X-Series portfolio of services. In strategic alliances with key Internet players such as Skype, Sling Media, Yahoo!, Google, eBay, Microsoft, Orb amongst others, the X-Series portfolios of services allow customers to effectively use their mobile phones in the same way as they use their home personal computer broadband service. (Annual report 2006)

Comparing to the other MNOs, like Vodafone, 3 Hutchison’s ARPU is much higher.
4.2.3 Summary

Overview the performance of 3 Hutchison, we can safely draw the conclusion that 3 Hutchison was successful to keep and attract the high-value customers, and moved up the revenue by 3G service. Especially the ARPU was much higher that the average. So there is no doubt that 3 Hutchison did a good job in increasing the revenue and ARPU by 3G.

4.3 NTT DoCoMo

4.3.1 Introduction to NTT DoCoMo

NTT DoCoMo is not only the premier mobile network operator in Japan, but also an influential force in advancing mobile communications technology on a global scale.

The revolution that brought by the third generation is changing our world now, and NTT DoCoMo was always at the leading edge of this revolution. NTT DoCoMo is one of the world leaders in the 3G service area. NTT DoCoMo launched FOMA in 2001 which was the world's first 3G mobile service based on W-CDMA and transformed the landscape of mobile communications in Japan and won the DoCoMo brand global recognition.

Comparing to other areas, Japanese 3G market is well-developed and there was no
doubt that NTT DoCoMo took a very important part in this process.

Now NTT DoCoMo begin to launch its services in Asia, Europe, and North America, and in strategic alliances with mobile and multimedia service providers in Asia-Pacific and Europe, and NTT DoCoMo is expanding its business on the global scale.

As we said the Japanese 3G market is well-developed, so the MNO should offer high level services to satisfy the customers’ demands. Here let’s have a view of NTT DoCoMo’s rich and colorful services (Data from NTT DoCoMo’s official website).

Osaifu-Keitai" (mobile phones with wallet functions) service

i-mode Related Services including: game playing, video viewing and convenient access to the latest news and weather forecasts.

i-appli: i-mode with Java: Downloading the software makes it possible to automatically update the news and weather forecast displays as well as to play new games.

i-area: Location Based Service

i-motion: Dynamic Video Content

i-motion mail

i-shot: Digital Camera Capability

i-channel: This service distributes the latest news, weather forecasts and other information to i-channel compatible i-mode phones.

4.3.2 DATA analysis

Operating revenues

<table>
<thead>
<tr>
<th></th>
<th>Millions of ¥ (excluding per share data)</th>
<th>Millions of US Dollars (excluding per share data)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2003</td>
<td>2004</td>
</tr>
<tr>
<td>Operating Results</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating revenues</td>
<td>¥4,800,086</td>
<td>¥5,048,065</td>
</tr>
<tr>
<td>Wireless services</td>
<td>4,960,861</td>
<td>4,487,912</td>
</tr>
<tr>
<td>Equipment sales</td>
<td>458,227</td>
<td>550,153</td>
</tr>
<tr>
<td>Operating income</td>
<td>1,056,719</td>
<td>1,102,918</td>
</tr>
<tr>
<td>Net income</td>
<td>212,481</td>
<td>650,007</td>
</tr>
</tbody>
</table>

Fig 4.10 Operating Revenue of NTT DoCoMo from 2004 to 2007

Most part of the operating revenues is from the wireless services which are composed by the voice-service and the non-voice service as we talked before. From those figures we can see that the operating revenues are stable.

- 39 -
NTT DoCoMo is different with Vodafone and 3 Hutchison. NTT DoCoMo’s main operation was launched in Japan, but Vodafone and 3 Hutchison expanded operation in many countries.

As the Japanese market is mature, NTT DoCoMo’s operating revenues became stable.

**Growth of 3G subscribers**

![Graph showing subscriber growth from 2003 to 2007](image)

The figures show that the number of the total subscribers did not get a fast growth due to the mature market. In Japan, the market penetration rate reached 79.6%. So it was not strange that the annual growth rate of the subscribers has declined in the year 2005, 2006 and 2007. And we also can expect that the growth rate will continue to decline in the future.

Another important factor showed is that NTT DoCoMo achieved the success in migration their 2G (mova) subscribers to 3G (FOMA) service. By March 2007, the number of 3G subscribers represented 82% of the total number of the subscribers.
Almost all the MNOs are facing the same problem that the ARPU was declining, even NTT DoCoMo, due to the decrease of the voice service following the further penetration of the mobile phone into low-end users and the competition among MNOs.

According to the figures, we can see the total ARPU was slowly declining, and the voice service ARPU has fallen fast. But the packet or non-voice service ARPU was increasing in 2007. If we compare the packet ARPU with Vodafone and 3 Hutchinson which we talked in Chapter 4 and Chapter 5, we will find NTT DoCoMo’s non-voice service takes a higher percentage than others. The NTT DoCoMo’s non-voice service has played a significant part in the total ARPU.

### NTT DOCOMO Free Cash Flow in Millions of YEN

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Free Cash Flow (yen)</td>
<td>192,237</td>
<td>510,905</td>
<td>1,003,583</td>
<td>862,934</td>
<td>468,915</td>
</tr>
</tbody>
</table>

### 4.3.3 Summary

While the European 3G market is developing, the Japanese 3G market is almost mature. It is hard for NTT DoCoMo to get a further large number of subscribers due
to the penetration rate of mobile phone in Japan reached 79.6% and around 82% of the total subscribers have migrated to 3G. When dealing with the declining ARPU, NTT DoCoMo launched multiplicate 3G service to draw up the ARPU. Thanks to their effort, the non-voice services play an important role in the total ARPU now. And the ARPU is still higher than the average. NTT DoCoMo’s successful experience should be learned by other MNOs, especially for MNOs which are planning to launch 3G such as China Mobile.
Chapter 5 Case study China Mobile

In this chapter, the data without notes come from the annual report of China Mobile, from the year 2004 to 2007, China Mobile’s Social Responsibility Report from 2005 to 2007, and from China Mobiles official website. The data from other sources are labeled with reference notes.

5.1 Introduction to China Mobile

Before we give the introduction of China Mobile, firstly we have a description about the development of mobile industry in China.

China Mobile is the largest MNO in china, which covers approximately 69% of the market share in China. By possessing 369.3 million subscribers (at the end of 2007), it is also known as the largest MNO in the world ranked by the number of subscribers.\(^\text{62}\)

In 1987 China launched the analog mobile service (1G) and migrated to the second generation systems in the early 1990s. According to the annual report from 2004 to 2007, China’s mobile penetration rate has increased from 29% to 41.6%. That was a huge growth rate for only four years.

The Mainland China telecom industry is currently firmly controlled by the government, and is monopolized by five companies, namely China Mobile (mobile services), China Telecom (fixed line services), China Unicom (mobile services), China Netcom (fixed line services) and China Railcom (fixed line services). Most of the market of mobile services is monopolized by China Mobile and its biggest competitor, China Unicom.\(^\text{63}\)

China is pushing the homegrown mobile wireless standard: TD-SCDMA (Time Division Synchronous Code Division Multiple Access) which was developed by the Chinese Wireless Technology Standard Group and acknowledged by International Telecommunication Union as a 3G standard.

China Mobile has three main service brands according to different target customers:

- **Go Tone:** it is the flagship brand. Its postpaid services target what China Mobile terms 'high class customers'. As its Chinese name implies, Go Tone enables international calling and global roaming and all the other value added services from China Mobile.

- **Easyown:** it is China Mobile's basic prepaid service and accounts for over 70% of China Mobile's customers. Marketing strategies vary between regions. In several

---

\(^{62}\) China Mobile’s official website: http://www.chinamobileltd.com/about.php?menu=1 2008-08-16

\(^{63}\) Telecom monopoly still exists, *China Daily*, March 01, 2007
cities, Easyown customers also have access to many Go Tone services.

**M-zone:** it targets the youth demographic. It is popular with university and college students but its popularity lags behind that of the other two brands in secondary and third-tier cities.  

5.2 Balanced Scorecard analysis with KPIs

5.2.1 Financial Perspective

  1. Operating Revenue
  As the biggest MNOs in China and also the biggest MNOs in the world by the number of subscribers, China Mobile has great growth in the operation revenue. Here is the operating data.

<table>
<thead>
<tr>
<th>Financial years</th>
<th>2007</th>
<th>2006</th>
<th>2005</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voice service revenue (million CNY)</td>
<td>247,344</td>
<td>211,339</td>
<td>181,765</td>
<td>163,334</td>
</tr>
<tr>
<td>Non-voice service revenue (million CNY)</td>
<td>91,609</td>
<td>69,309</td>
<td>50,187</td>
<td>31,651</td>
</tr>
<tr>
<td>Others revenue (million CNY)</td>
<td>18,006</td>
<td>14,710</td>
<td>11,089</td>
<td>9,008</td>
</tr>
<tr>
<td>Total revenue (million CNY)</td>
<td>356,959</td>
<td>295,358</td>
<td>243,041</td>
<td>203,993</td>
</tr>
</tbody>
</table>

Fig 5.1 Service Revenue of China Mobile from 2004 to 2007

From the four years figures we can see the big growth both in Voice service revenue and Non-Voice service revenue. From the 2004 to 2007, we can calculate the growth rates of Voice revenue are respectively 11.3%, 16.3% and 17.0%. The growth rates of non-voice service revenue are respectively 58.6%, 38.1% and 32.1%. These growths are much higher than Vodafone’s growth in the corresponding period.

2. EBITDA

<table>
<thead>
<tr>
<th>Financial years</th>
<th>2007</th>
<th>2006</th>
<th>2005</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBITDA (million CNY)</td>
<td>194,003</td>
<td>159,574</td>
<td>133,338</td>
<td>122,646</td>
</tr>
<tr>
<td>Growth in %</td>
<td>21.6%</td>
<td>19.7%</td>
<td>18.4%</td>
<td></td>
</tr>
</tbody>
</table>

Fig 5.2 EBITA of China Mobile from 2004 to 2007

The EBITDA had significant increases during 2004 and 2007 and the growth rate was also increasing.

3. Free Cash Flow

<table>
<thead>
<tr>
<th>Financial years</th>
<th>2007</th>
<th>2006</th>
<th>2005</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free Cash Flow (million CNY)</td>
<td>63,473</td>
<td>62,358</td>
<td>60,256</td>
<td>42,381</td>
</tr>
<tr>
<td>Growth in %</td>
<td>1.8%</td>
<td>3.5%</td>
<td>14.2%</td>
<td></td>
</tr>
</tbody>
</table>

Fig 5.3 Free Cash Flow of China Mobile from 2004 to 2007

Free Cash Flow increased much in 2005, but remained stable afterwards.

4. ARPU

<table>
<thead>
<tr>
<th>Financial years</th>
<th>2007</th>
<th>2006</th>
<th>2005</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARPU in CNY</td>
<td>89</td>
<td>90</td>
<td>90</td>
<td>92</td>
</tr>
</tbody>
</table>

Fig 5.4 ARPU of China Mobile from 2004 to 2007

The ARPU trend is very stable without any significant change.

5.2.2 Customer Perspective

1. Number of Subscribers

<table>
<thead>
<tr>
<th>Financial years</th>
<th>2007</th>
<th>2006</th>
<th>2005</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numbers of subscribers in Million</td>
<td>369.3</td>
<td>301.2</td>
<td>246.7</td>
<td>204.3</td>
</tr>
</tbody>
</table>

Fig 5.5 Number of Subscribers of China Mobile from 2004 to 2007

From there figures we also can calculate the growth rates of numbers of subscribers are 20.8%, 22.1% and 22.7%. Comparing with the other MNOs’ growth rates in Europe, China Mobile’s growth rate is absolute much higher. That is because the penetration rates in many Europe countries are already 80% or higher, but in China the penetration rate is only 41.6% which is only half of European.

2. Penetration Rate

<table>
<thead>
<tr>
<th>Years</th>
<th>2007</th>
<th>2006</th>
<th>2005</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penetration rate</td>
<td>41.6%</td>
<td>35%</td>
<td>26.3%</td>
<td>29%</td>
</tr>
</tbody>
</table>

Fig 5.6 Penetration Rate of China Mobile from 2004 to 2007

Despite the high increasing rate of subscribers, the mobile phone penetration rate is still low in China, only 41.6% in 2007, which means the market is still far from saturation. However, mobile phone penetration rate in large cities tends to be saturate. Take Shanghai as an example, the mobile phone users has already been 81.2% of the total population in the year 2006. Therefore, rural area contributes mostly to the high increasing rate of the total amount of subscribers. Lower income and fewer infrastructures prevent that group of customers being non-SMS data service users. The non-SMS data service (such as Color Tone, MMS and WAP) customers come from the high-end customers who are not sensitive to prices but focus on service

---

quality.

3. Average Minutes of Usage per User per Month (MOU)

<table>
<thead>
<tr>
<th>Financial years</th>
<th>2007</th>
<th>2006</th>
<th>2005</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOU (minutes)</td>
<td>455</td>
<td>381</td>
<td>335</td>
<td>297</td>
</tr>
</tbody>
</table>

Fig 5.7 MOU of China Mobile from 2004 to 2007

As we can see from the annual reports from 2004 to 2007, MOU increased from 297 minutes in 2004 to 455 minutes in 2007, and the growth rate was also getting increased.

4. ARPU per Contract/Prepaid subscribers

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract subscribers Million CNY</td>
<td>65.3</td>
<td>61.3</td>
<td>59.9</td>
<td>58.1</td>
</tr>
<tr>
<td>ARPU/ contract subscriber CNY</td>
<td>207</td>
<td>185</td>
<td>167</td>
<td>168</td>
</tr>
<tr>
<td>Prepaid subscribers Million CNY</td>
<td>235.9</td>
<td>185.4</td>
<td>144.4</td>
<td>108</td>
</tr>
<tr>
<td>ARPU/ Prepaid subscribers CNY</td>
<td>55</td>
<td>55</td>
<td>56</td>
<td>57</td>
</tr>
</tbody>
</table>

Fig 5.8 Comparison between Contract and Prepaid Customers of China Mobile from 2003 to 2006 (No data provided from annual report 2007)

According to China Mobile’s annual report from 2004 to 2007, the number of high-end customers (mostly contract subscribers) has a low increasing rate, less than 7%, and this group of customers takes less than 20% of the total customer. Comparing with high-end customers, the amount of low-end customers (mostly prepaid subscribers) is increasing rapidly at an average rate of 28%. However, the point we must emphasize is that ARPU from high-end customers are much higher than that from low-end customers, and it is also increasing rapidly from 168CNY/month in 2003 to 207 CNY/month in 2006. On the contrary, ARPU from low-end customers remains at the same level, around 55CNY/month from 2003 to 2006. Therefore, value added services, such as MMS, WAP and Color Ring, cannot often be utilized by the low-end customers, and first adapters to 3G technology come definitely from high-end customers.

5. Overall Customer Satisfaction Rate

<table>
<thead>
<tr>
<th>Financial years</th>
<th>2007</th>
<th>2006</th>
<th>2005</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Customer Satisfaction Rate</td>
<td>80.8%</td>
<td>79.6%</td>
<td>75%</td>
<td>74.14%</td>
</tr>
</tbody>
</table>

Fig 5.9 Penetration Rate of China Mobile from 2004 to 2007
Based on China Mobile’s annual report from 2004 to 2007, the overall satisfaction rate remained high, and the satisfaction rate was also increasing.

5.2.3 Learning & Innovation Perspective

1. Average operating expense per user per month

<table>
<thead>
<tr>
<th>Financial years</th>
<th>2007</th>
<th>2006</th>
<th>2005</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average operating expenses per user per month (CNY)</td>
<td>¥58.2</td>
<td>¥61.8</td>
<td>¥62.9</td>
<td>¥63.9</td>
</tr>
<tr>
<td>Growth in %</td>
<td>-5.8%</td>
<td>-1.7%</td>
<td>-1.6%</td>
<td></td>
</tr>
</tbody>
</table>

Fig 5.10 Average operating expenses per user per month of China Mobile from 2004 to 2007

Based on China Mobile’s annual report from 2004 to 2007, average operating expenses per user per month show a decreasing trend, but the decline is not so large.

2. Number of Patent Applications Submitted

<table>
<thead>
<tr>
<th>Financial years</th>
<th>2007</th>
<th>2006</th>
<th>2005</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Patent Applications Submitted</td>
<td>475</td>
<td>188</td>
<td>129</td>
<td>31</td>
</tr>
<tr>
<td>Growth in %</td>
<td>153%</td>
<td>45.7%</td>
<td>316%</td>
<td></td>
</tr>
</tbody>
</table>

Fig 5.11 Number of Patent Application Submitted of China Mobile from 2004 to 2007

China Mobile submitted 475 patent applications during the year of 2007, which is almost 15 times amount of patent applications submitted in 2004. This indicates that China Mobile had paid much more attention on R&D during the recent years, and the results were rewardable.

3. Product designing

As we have mentioned, China Mobile has three main service brand: 1) Go Tone, which enables all service that China Mobile offers, focuses on high-end users, Easyown, which has basic voice and SMS services, focuses on low-end users, and M-zone, which has some special offers only for young students. China Mobile is keeping obtaining new customers by lowering the price, increasing network coverage and improving service quality.

Besides, China Mobile has proactively pursued product innovation and business promotion, and as a result the proportion of revenue from value-added business has further increased.

New applications, such as Full Track Download, Mobile TV, Mobile Search, Mobile
Mailbox and Mobile Map, have been launched. New business areas, such as Mobile Advertising and Mobile Payment are also being explored.

However, comparing with 3 Hutchison, the services that China Mobile offers are rather out of date. Most of the data services utilized by customers are SMS, and non-SMS data service, such as Color Ring, WAP and MMS are not widely used. 3 Hutchison has different strategies and special local services in different countries, which suits the local market. For example, in Sweden, 3 Hutchison offers 15 items, over 50 sub-items of mobile phone services, with focuses on all areas, from business to entertainment.66

4. Corporate Culture
China Mobile had devoted itself to building up a corporate culture, which is growing harmoniously with the economy, society and environment, for years. It has been recognized as one of the top enterprises in China by the customers and stakeholders. And China Mobile will obviously continue this culture with its further development.

5.2.4 Internal Perspective

1. Expense on Personnel

<table>
<thead>
<tr>
<th>Financial years</th>
<th>2007</th>
<th>2006</th>
<th>2005</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personnel Expense (million CNY)</td>
<td>18,277</td>
<td>16,853</td>
<td>14,200</td>
<td>10,910</td>
</tr>
<tr>
<td>Growth in %</td>
<td>8.5%</td>
<td>18.7%</td>
<td>30.2%</td>
<td></td>
</tr>
</tbody>
</table>

During the year 2004 and 2007, China Mobile increased the expense on personnel from 10910 million CNY to 18277 million CNY, the increase rate is 67.5%, which is significantly large.

2. Expense on Marketing
China Mobile’s annual report from 2004 to 2007 did not provide a specific cost on marketing expense, but the expense on marketing is included in the item “Other Operating Expenses”, which shows an increasing trend. The detailed data is showed below.

<table>
<thead>
<tr>
<th>Financial years</th>
<th>2007</th>
<th>2006</th>
<th>2005</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Operating Expenses (million CNY)</td>
<td>123,430</td>
<td>110,569</td>
<td>80,254</td>
<td>62,881</td>
</tr>
<tr>
<td>Growth in %</td>
<td>11.6%</td>
<td>37.8%</td>
<td>27.6%</td>
<td></td>
</tr>
</tbody>
</table>

3. Expense on Research and Development

China Mobile’s annual report from 2004 to 2007 did not provide a specific cost on R&D, but the expense on R&D is included in the item “Other Operating Expenses”, which shows an increasing trend. (See Fig 8.10)

4. Distribution

**Number of base stations**

<table>
<thead>
<tr>
<th>Financial years</th>
<th>2007</th>
<th>2006</th>
<th>2005</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of base stations</td>
<td>307,000</td>
<td>234,000</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Growth in %</td>
<td>31.2%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fig 5.14 Number of Base Station of China Mobile from 2004 to 2007

<table>
<thead>
<tr>
<th>Financial years</th>
<th>2007</th>
<th>2006</th>
<th>2005</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Group’s proprietary sales outlets</td>
<td>42,000</td>
<td>34,000</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Number of Retail sites</td>
<td>514,707</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Fig 5.15 Number of Sales Sites of China Mobile from 2004 to 2007

According to China Mobile’s annual report from 2004 to 2006, by the end of year 2007, the number of base stations reached 307000, and number of Group’s proprietary sales outlet reached 42000, and number of retail sites reached 514707. Although not all the data are provided, we can still see the increasing trend of these numbers.

**Third Party Service Providers**

According to China Mobile’s annual report 2007, China Mobile provided a so called “Monternet” platform which included SMS, WAP, MMS and Color Ring. Third party service providers could distribute their services over the platform and China mobile charged a 15% fee for distributing their services.

5. Social responsibility

According to China Mobile’s official website, four programs are applied for the social responsibility: Rural Program, Life Program, Culture Program and Green Program.

Rural Program is aiming for rural development. There are several projects applied within this program. For example, the rural network coverage is improved by “Village Connected” project, “information highway” helps rural residents gather latest information and learn newest farming technology. Through Rural Program, China Mobile acquires more subscribers and rural residents gets also benefit in their lives.

Life Program is aiming for improving life quality and giving support to the society through high quality telecom services. China Mobile provided high network quality
and sustained network stability among major natural disasters, for example, during earthquakes China Mobile’s stable network gives big convenience for rescue activities.

Cultural Program is aiming for contribution to cultural construction. Programs like “Red Sayings” and “E-thumb literature” and “Mobile Library Project” provides good healthy cultural products to customers, especially for youth.

Green Program is aiming for contributing to a green environment. China Mobile has devoted itself to improving technology in order to reduce carbon dioxide emission, to reduce energy consumption, to improve production efficiency, and achieved significant development.

5.2.5 External Factors that Have Great Influence on China Mobile

Economical problem in China
China has an unbalanced distribution of population and resource, and the economic growth rate is therefore unbalanced. Southeastern coastal area is much richer and has much more population than western area. Due to the low density of population and the low purchasing power in western China, the expense of obtaining new users in that area is much higher than in eastern China. Furthermore, the total purchasing power is much lower than developed countries due to low GDP/capita.

Government control
Because the telecommunication is controlled by Chinese government, the development of China Mobile depends partially on the government’s policy. Although discussed for several years, when the 3G license will be released, who will get the 3G license, how much the license costs and which 3G technology standard must be used are still unknown and it is only the government that can answer the question.

Cost of 3G
We tried many ways to predict the future of 3G in China, but finally we failed that. Because we can not get the accurate figures of how many person will use the new 3G services and how much penetration rate of 3G. China is changing everyday. But we can get a rough picture by the cost of investment and the comparison with Vodafone’s operation in UK and Germany.

China chose 8 big cities and built the TD-SCDMA networks in the purpose of preparing for the 3G expanding. And also it was used for test the TD-SCDMA system.

There cities were Xiamen, Beijing, Shanghai, Tianjin, Shenyang, Guangzhou, Shenzhen and Qinhuangdao with an investment of 26.7 billion CNY.
If China Mobile wants to build the 3G network which can cover almost whole China, the investment will be about 200 billion CNY for the first 3 years.\textsuperscript{67}

Comparing with the case in UK and Germany, and also considering the advantage of the huge population and the disadvantage of the much lower ARPU, even China Mobile can get the 3G license in a very lower price from the government, it is still very hard to get a positive NPV (Net Present Value).

\textbf{5.2.6 Summary}

China Mobile has extremely good environment in China because of the lack of competition and a good governmental environment. With the world’s largest customer amount, and a relatively low penetration rate, China Mobile has still a large development space in China.

\textsuperscript{67} http://www.cww.net.cn/news/html/2009/1/7/2009171044561325.htm 2009-02-08
Chapter 6 Result and Conclusion

6.1 Comparison of China Mobile and three World’s leading MNOs

Based on the data provided from Chapter 4, we can see that 3 Hutchison did best in the international market, because every factor is increasing, although some of the values are not highest among the three MNOs. This is due to 3 Hutchison’s customer oriented product strategies, and its best value chain network with Skype, Sling Media, Yahoo!, Google and so force, as we have mentioned in Chapter 4. Furthermore, 3 Hutchison’s Non-voice ARPU took up to 30% of the total ARPU, which is highest among the MNOs, which indicates that 3 Hutchison provides best data service. The product strategies and advanced data service perhaps contribute to 3 Hutchison’s increasing ARPU, when the ARPU from other MNOs are all declining.

NTT DoCoMo has the best technology and best services, but almost the whole market is located in Japan. Whether NTT DoCoMo will succeed in the international market is still unknown. Although NTT has single market, it cannot be a good example for China Mobile, who has also single market – China mainland, because the technology NTT DoCoMo is utilizing cannot be catched up by China Mobile in recent years, and the high-end customer penetration rate of NTT DoCoMois rather high, comparing to China Mobile’s low percentage of high-end customers.

China Mobile’s ARPU trends stable, and there was no big change in recent years. Fast growth in the operating revenue and number of subscribers and the stabile ARPU, these indicators seemingly show that it is a good time to launch the new generation services. But if we compare these figures with Vodafone from a holistic vision, we can find that the number of the subscribers of China Mobile preponderated over Vodafone and became the biggest MNOs in this perspective, but unfortunately China Mobile’s Operating revenues are much lower than Vodafone’s. However, as we showed in Chapter 5 Vodafone’s case, those main countries where Vodafone launched 3G services were Germany, Italy, Spain and UK. In these countries, Vodafone’s ARPU were around EUR 22 to 35. But China Mobile’s ARPU was only about CNY 90, which means that was only no more than one third of these countries’. The low purchasing power and unbalanced economical situation in China are the main reasons to the low ARPU of China Mobile. Therefore ARPU from China Mobile in 2007 is approximately only 1/3 of Vodafone’s ARPU in 2007. China Mobile therefore has to obtain 3 times customers in order to cover the same expense in, for example, the purchasing a same 3G equipment as Vodafone. This problem cannot be solved in recent year, so China Mobile should formulate different strategies for this situation.

Furthermore, compared with other MNOs, the services of China Mobile are still out of date with limited choices. The value chain is still based on traditional mode, and is
lack of diversity.

6.2 Visualizing Cause-Effect Factors

According to the comparisons in the previous chapter, we can summarize China Mobile’s situation as below:

1. Financial perspective:
   Rapid increasing of operating revenue, EBITDA, and Free Cash Flow
   Stable ARPU, but the ARPU net value is rather low, only 90CNY
   Low percentage of non-voice service revenue

2. Customer perspective
   Rapid increasing of customer numbers, but most of them are low-end customers
   Stable high-end customers, but very little amount compared with large amount of low-end customers
   high-end customers contributes to most of the revenue
   Very low penetration rate
   Increasing MOU
   High satisfaction rate

3. Learning and Innovation perspective
   Average operating expense per user per month keeps going down
   Increasing of patent application submitted
   Continuous development of new product, but still lack of competitive strength, much lagged behind the average level in the world
   Good corporate culture

4. Internal perspective
   Increasing of personnel, marketing and R&D costs
   Increasing of distribution channels, i.e. base station constructions, sales sites and third party service providers
   Good social interaction, with for programs: Rural, Life, Cultural and Green Programs

5. External factors
   Unbalance economical growth rate in China, and low income
   Nice government support
   Almost no competition in Chinese telecom market
   High cost of 3G technology

Based on the factors above, and the analysis in the previous chapter, the KPIs and their interactions can be visualized as the figure below:
Fig 6.1 Cause-Effect link of different KPIs
6.3 Strategy map

6.3.1 Financial Perspective

1. Increase operating revenue
Although the operating revenue is already rapidly increasing, China Mobile can further increase the revenue by improvement in the other three perspectives, for example, to increase customer numbers, to lower the cost, to improve the expense efficiency, to do more innovations and so on.

2. Increase ARPU
The relatively low ARPU has much space for increasing. To be noted, ARPU among high-end customers is much higher than the low-end customers, and therefore to increase high-end customers is the most direct way to increase ARPU.

3. Keep reasonable cost
Cost can be reduced by incensing financial control, making cost effective innovations, and effective management.

6.3.2 Customer Perspective

1. Increase customer numbers and penetration rate
The unbalanced economical growth between urban and rural areas decides that the market in large cities tends to be saturated, and the market in the rural area is much undeveloped. Therefore the customer strategy in the cities is to maintain old and to obtain new high-end customers, while China Mobile should devote itself to explore more market in the rural areas. With the economical development in China, poor areas may become rich areas in the future, and low-end customers China Mobile could obtain today may also become high-end customers in the future.

2. Improve service quality
To maintain high service quality is the best way to keep the customers, and high service quality also contributes to the corporate image. Therefore, China Mobile needs to maintain and even further improve the service quality, although the customer satisfaction rate is already high.

3. Launch new services
3 Hutchison’s example showed that to provide products with different variations is a good way to obtain high-end customers, and to increase ARPU. Therefore, China Mobile should not be satisfied with the current situation, even there is almost no competition in the market. In order to further increase the revenue, to develop new products is necessary.
6.3.3 Internal Perspective

1. Increase personnel’s productivity and service quality
   Personnel are the base of the enterprise. Good personnel can provide efficient productivity, and provide nice customer service. Therefore, rewards and motivations are necessary for stimulate personnel’s productivity.

2. Obtain an effective supply and distribution network
   An effective network can lower the cost, and increase the efficiency. China Mobile needs also to build a good cooperation network of third party service providers, and build a win-win situation with them.

3. Intensify internal management
   Financial, personnel, and strategy should always be well managed, which can make the enterprise more effective, cost–efficient and goal-directed.

4. Provide customer-oriented service, and keep good customer relationship
   As mentioned before, high-end customer must be retained. In order to retain the customers, high quality service and customer relationship is very important.

5. Enhance R&D
   R&D plays an essential role for the development of the enterprise. The cost could be further reduced by new technique, and new products could be produced after R&D. However, R&D should be managed by proper strategy, otherwise research on unnecessary perspective will not gain any profit but lose much.

6. Keep social relationship
   The on-going programs (Rural Program Life Program Cultural Program and Green Program) are good for China Mobile’s corporate image, and are also good for its further development, so China Mobile should maintain these programs, and create more programs that can not only improve China Mobile’s social image, but also bring profits.

6.3.4 Learning and Innovation

1. Keep good corporate culture
   As discussed before, corporation culture is the foundation of innovation. With a good corporate culture, the activity of personnel will be stimulated, and the efficiency will be increased.

2. Strengthen innovation ability
   China Mobile can stay at the advantageous state only if the innovation ability is continuously strengthened.
3. Strengthen human resources
The innovation ability can only be effectively improved by high quality human resources. Therefore the management on human resource should be strengthened.

6.3.5 Forming Strategy Map

Finally, a strategy map is drawn according to the strategies given above.
Fig 6.2 Strategy Map

Financial Perspective
- Increase Operating Revenue
- Increase ARPU
- Keep Reasonable Cost

Customer Perspective
- Launch New products
- Increase Customer numbers
- Maintain and obtain High-end Customers
- Keep Reasonable Cost
- Increase Service quality
- Increase Penetration rate
- Obtain Low-end Customers

Internal Perspective
- Operations Management Process
  - Increase personnel’s productivity and service quality
  - Obtain an effective supply and distribution network
  - Intensify internal management
- Customer Management Process
  - Provide customer-oriented service
  - Keep good customer relationship
- Regulatory and Social Process
  - Keep Social interactions
    - Rural Program
    - Life Program
    - Cultural Program
    - Green Programs
- Innovation Process
  - Enhance R&D

Learning and Innovation Perspective
- Keep good Corporate culture
- Strengthen Innovation ability
- Strengthen Human resources

External Factors
- Adaptation of strategies to:
  - Low income
  - Unbalanced economical growth of urban and rural areas
- Utilize the advantage of:
  - Almost no competition
  - Government support
6.4 Conclusion

In this research, we explored the theories of balanced scorecard, and found out how it became a strategy formulating method instead of a performance evaluation method. By combining balanced scorecard and key performance indicators, it became a powerful method for both performance measurement and strategy mapping, so the strategy map was hence developed into application. After exploring the theories, we started the studies of how to formulate a strategy step by step, and how to define KPIs which were suitable for strategy mapping. Then we followed the procedures of strategy mapping, and started the strategy map formulation for China Mobile. With the defined KPIs which were specific for MNOs in the telecom market, we evaluated the performance of the world’s three leading MNOs, Vodafone, 3 Hutchison and NTT DoCoMo, and compared them with China Mobile. The strength and weaknesses of China mobile were identified, and the cause-effect linkages of the KPIs were discovered. Finally the strategy map for China Mobile was formulated based on the four perspectives, financial, customers, internal and learning and innovation perspectives, and in each perspective, practical solutions were provided.

6.5 Recommendations and Further Research

As we had developed the steps to design a strategy map, the first crucial step is ascertaining the current situation of the organization. For this step, we used benchmarking with the leading MNOs like Vodafone, 3 Hutchison, and NTT DoCoMo to investigate the gap between China Mobile and the world’s leading MNOs, to realize how far away from the current situation to become the world’s first-class communications enterprise. On the other hand, China Mobile should understand its strength, like the biggest population and the support of China government, etc. For this step, another excellent alternative approach to analyze the current situation is SWOT.

Benchmarking approach is more external focused than SWOT, or more holistic. But SWOT is more internal focused and more detailed in some way. For a more completed situation analysis, organization can employ both of them.

Analyze the causal-effect among perspectives and KPIs is one of the most significant step and also one of the most difficult course. A great deal of organizations failed with design an efficient strategy due to the vague causal-effect relationship. When the manager facing with hundreds of performance indicators, they easily feel confused about which KPI are driving another. In order to solve this problem, a reliable approach is usage of statistic. By calculating the related coefficients among the KPIs or the linear relationship between two KPIs, manager could easily to discover which KPI has a closer relationship with another. For instance, if financial KPI A has related
coefficient with internal process KPI B by ρ=0.8, has related coefficient with KPI C by ρ=0.6, so KPI A has a closer relationship with KPI B than KPI C. For the real situation, this statistic process will be more complicated and could be a huge work in dealing with hundreds of Performance indicators.

Due to we are limited by the time and conditions, we couldn’t manage those further researches. But it is an attempt to complete such empirical study, and hopefully it will inspire the further researchers.
Reference List

Literature


Bruce L. Berg (2009), Qualitative Research Methods for the Social Science


Ghauri and Gronhaug, (2002), Research methods in business studies, Pearson Education


R.C. Bogdan and S.K. Biklen, Qualitative Research for Education, 4th ed, Boston: Allyn & Bacon


Articles

2GC. Ltd. Performance management & the third generation of Balanced Scorecard 2003


Dr. Nihal M. Nounou VP for R&D and Chief Scientist Strategy Map Design A Step-By-Step Guide

Douglas Scherer, Overview of the Balanced Scorecard, June 17, 2002

F. John Reh, Key Performance Indicators (KPI)

Griffiths J  December 2003  Balanced Scorecard Use in New Zealand Government Departments and Crown Entities  page 70-79


Henk Akkermans and Kim van Oorschot  Developing a Balanced Scorecard with System Dynamics  Eindhoven University of Technology


John Griffiths (2003 ) Balanced Scorecard Use in New Zealand


Kathy A. Paulson Gjerde and Susan B. Hughes  Racing to Success by Identifying Key Performance Drivers

Larry Cooper, CSF’s, KPI’s, Metrics, Outcomes and Benefits


Telecom monopoly still exists, China Daily, March 01, 2007

Yee-Ching lilian chan (2002), The benefits of balance, CMA Magagement

**Company Profiles**

Annual reports of

Datamonitor Vodafone Group PLC 2005
T-Mobile international AG&CO. KG Company Profile Reference code: 13067 Aug 2006
Teliasonera AB SWOT analysis 2005
Internet
Four MNOs homepage
http://www.vodafone.com/
http://www.hutchison-whampoa.com/
http://www.nttdocomo.com/
http://www.chinamobile.com/

Other websites:
http://download.csdn.net/source/938650  2009-02-15
http://management.about.com/cs/generalmanagement/a/keyperfindic.htm  2008-05-14
http://searchmobilecomputing.techtarget.com/sDefinition/0,,sid40_gci214590,00.html 2008-07-02
http://wirelesswatch.jp/2006/06/19/docomo-3g-subscribers-become-majority/ 2009-02-07
http://www.12manage.com/methods_rockart_csfs_kpis.html 2008-08-08
http://www.cnnic.net.cn/en/index/00/02/index.htm  2008-08-08
http://www.infoworld.com/article/07/01/22/HNchinamobilesubscribers_1.html  2008-08-18
http://www.investment.gov.cn/2006-08-08/1152500440597.html  2008-08-17
http://www.itsmsolutions.com/newsletters/DITYvol2iss40.htm#_ftnref1 2008-08-08
Appendix.1 Background of 3G technology and the changes 3G brings

A.1 Introduction of Generations

This thesis, after all, focuses on the mobile network business, but we do not reject to an understanding of the technology which makes all happen. And also in our opinion, it is necessary to give some introductions of technical and physical infrastructure of the mobile system and standard on which the business application based. So in this chapter, we would like to describe the generations of this industry from the earliest first generation (Analog) to the third generation (3G).

And following, we focus on the new applications of the 3G which can bring huge profits for the MNOs. Here following generations we have already had in the world:

<table>
<thead>
<tr>
<th>Generations</th>
<th>Names</th>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>First generation</td>
<td>1G</td>
<td>Analog</td>
</tr>
<tr>
<td>Second generation</td>
<td>2G</td>
<td>CDMA, TDMA, GSM</td>
</tr>
<tr>
<td>Two and half generation</td>
<td>2.5G</td>
<td>GPRS, EDGE</td>
</tr>
<tr>
<td>Third generation</td>
<td>3G</td>
<td>CDMA2000, WCDMA, TD-SCDMA, WiMAX</td>
</tr>
</tbody>
</table>

Fig A.1 Overview of Generations

For some people with non-engineering background, it is probably tedious and abstract, but we have to accept that the technologies are amazing, and they are changing our lives day by day. Here we will not talk the detail about there standard, and if any reader are interest in those standards, they can find them in http://en.wikipedia.org or in others books.

A.2 Features of 3G

3G system offered a high speed of transmitting data, interoperability and roaming and it makes a lot of new services possible. Before introducing the new value-adding services, we would like to give a simple example to make readers clear about the changes of transmitting speed.

Let’s take a download of a 3-minute MP3 song as an example. In analog, of course we can’t download anything. In 2G, we already can download the music, and the speed is about 10kb/sec, so it will take maybe 30-40 minutes to finish the download. In 2.5G, it will be around 5-10 minutes based on the speed 64-144kb/sec. But 3G can offer us the higher speed by 144kb/sec to 2M/sec, which means that it will spend only 10 seconds to 1.5 minutes to download.
This is only a very simple case, and 3G can offer us many new applications base on the high speed. Some of these new applications are used by MNOs for subscribes as value-added services. And most of those services are non-voice service. The investors and the MNOs are not charitarians or charities, and the only purpose to launch 3G services to subscribers is earning profits.

A.3 New applications

Here we list the new applications or new services brought by 3G, and some of them were already launched and some of them will be launched sooner.

To make it easier to be understood, we would like divide these new applications into four major domains: Communication, Entertainment, Information and M-Commerce.

Communication: before 3G, we had many ways to communicate like voice, short message and e-mail. But in 3G days, we have new ways to do that.

Message services: when we are using 2G, we can use SMS (short message service) to connect with others. Now in 3G, we have EMS (enhanced message service) and MMS (multimedia message service). There two new services can transmit the message together with clear pictures, short video and also voice or music.

E-mail services: In 3G we can send and receive e-mail quickly and convenient just as we are using the computer if we don’t care about the small keyboard and the small screen.

Face to face communication: we always think that the face-to-face talk is the most efficient way to get information from the talk and is easiest way to understand each other. Now in 3G if we use the videophone we can have a reality with face-to-face communications using real-time sound and video.

Entertainment: there is a huge potential growth in this area. This domain encompasses music download, video download, online game, gambling and mobile TV.

As the simple case we had introduced before, 3G offers high speed for download, so it will more convenient to download the music, video. And the high enough speed also can be used for subscribers watching the TV on cell phones.

Online game and Gambling also have huge potential growth. The only limits are that the small screen and the small keyboard, but now more and more producers are offering the big screen cell phones with a multi-ply input keyboard. More games can be run on the cell phones. In this area, it will attract a great many of youth.
Information: we are living in the information space, and we get many types of information depending on different purposes. Some of information is necessary for us like the weather and traffic, and some of information is requested due to people’s interest such as the sport news, stock price. In 3G, we can view the internet web pages to get these information or we can order this service that the MNOs will send information to the customers’ cell phones automatically.

Another information can be gotten in 3G is maps, and also we call it GPS (the global positioning system). When you go to another area, you need not to find the “information office” to get the map immediately thank to the GPS on your phone.

M-Commerce: (mobile commerce) is the buying and selling of goods and services through wireless handheld devices such as cellular telephone and personal digital assistants (PDAs). Known as next-generation e-commerce, m-commerce enables users to access the Internet without needing to find a place to plug in.68

When we were in the 2.5G, some of the MNOs already offered kinds of Commerce services, but in 3G this application will be used more common. Some of modern services are Mobile Ticketing, Information services, Mobile Bank, Mobile Purchase, Mobile Marketing and Advertising.

A.4 The Change from Value Chain to Value Web for MNOs

In cost management, Value chain analysis is a strategic analysis tool used to better understand the firm’s competitive advantage, to identify where value to customers can be increased or costs reduced, and to better understand the firm’s linkages with suppliers, customers, and other firms in the industry. Here we use this approach to analyze the changes of mobile network industry which were caused by the new generation of the wireless technology. 3G is a big opportunity for all the MNOs, and most of them want to use the new applications and the value-added services to move up their revenues and profits. As an old adage said “The business of business is business”.

For the general service industry, the firms begin with the concept of the service and their service design, purpose, and demand and then they produce their kind of services and provide the service to customers. For the normal service industry, maybe sometimes the value chains analysis are more difficult to describe because it might have no physical flow to visualize. But for the mobile network industry which was changed lots of due to the new generation not only in the suppliers, services design, services content, but also the sort of customers. We believe that value chains analysis can offer us a clear vision about the changes.

68 http://searchmobilecomputing.techtarget.com/sDefinition/0,,sid40_gci214590,00.html 2008-07-02
The value chain can be described as three main phases: firstly the upstream phase which involves the firms’ linkages with suppliers; and for MNOs based on 3G the suppliers means the content producers and providers and so on. Secondly the operations refer to produce and provide services to customers. Finally the downstream phase means the linkages and related services with customers.

We are not going to employ this approach to do the firms’ analysis in the Case Study part, but we prefer to use this tool to get an overview of the changes of this industry based on the effects of 3G and we use it as a stepping-stone to do the further research.

Industrial sectors can often be described by the interdependency between players in the delivery of value to customers. Traditionally, the telecommunications industry has been characterized as a short sequential value chain as shown in Figure 1. Network operators invested in the physical infrastructure required to operate a telecommunications service.69

As Figure 2 shows, the move to 3G services was accompanied by a transition in the telecom sector from a simplistic value chain involving the network operator and the customer, to one which involved content creators, aggregators, packaging solutions, network operators, service providers and ultimately customers (Durlacher, 1999). A configuration such as the one presented in Figure 3 has been termed a Value Web as the value added activities of players is not sequential and the interdependency between players is complex. In addition, new players (e.g. content providers and aggregators) exist in the mobile commerce value web.70

---


Fig A.3 The Mobile Commerce Value Web