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Enter the Gphone

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Abstract

There are rumors in the mobile telecom industry today implying that a launch of a “Gphone” by Google might not be far away. By bringing both new technology and a new business model onto the mobile phone market, this occurrence could have a dramatic impact on the entire industry. The purpose of this thesis is to analyze a possible entry by Google into the mobile phone market in order to predict how this would affect traditional mobile phone manufacturers like Sony Ericsson. The thesis is based on a qualitative study, using mainly secondary data, and the thesis should be seen as having an understanding purpose. In brief, the authors came to the conclusion that the launch of a Gphone by Google would indeed have dramatic effects on the mobile phone market and it would constitute a threat to the survival of traditional mobile phone manufacturers like Sony Ericsson. However, by adapting quickly to the new circumstances, an entry by Google could also be considered to bring an opportunity for Sony Ericsson.

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1. Introduction

In this section an introduction to the thesis will be presented, followed by a general background description and a formulation of the problem. Thereafter the purpose, delimitations and assumptions of the thesis will be put forward. This will be followed by expected contributions and a thesis disposition.

"[The process] must be seen in its role in the perennial gale of creative destruction; it cannot be understood on the hypothesis that there is a perennial lull."

Joseph A. Schumpeter, 1976¹

An important feature for today's mobile phone is its capability to connect to the Internet. The expectations from customers to be able to use their mobile phone to access the Internet in the same way as they can do from a PC have increased. The applications and trends of web 2.0², such as MySpace, Facebook and YouTube, change very quickly, and therefore the possibility to rapidly create and launch new software applications to the platforms that are used in mobile phones is becoming a key success factor for new mobile phones. Because of this, platforms based on open source will become the system of preference, due to the fact that any programmer can create applications for these platforms and thereby speedily transfer new trends of the Internet and web 2.0 to the mobile phone.³

In spite of the several technological shifts that the mobile telecom industry has experienced since the birth of the modern mobile phone in the 1970s, companies like Sony Ericsson (as Ericsson), Nokia, and Motorola have been major players on the mobile phone market from the early days, and still are.⁴ However, theories such as Schumpeter's ideas on creative destruction suggest that these shifts in technology would have led to large changes among the

¹ Schumpeter (1976)

² "Dating from 2004, the term Web 2.0 is variously understood as new forms of website development and delivery technology, changing uses of the Internet to emphasize sociability over consumption, new understandings of the possible financial exploitation of the web, and more broadly, a new way of thinking about the Internet as a whole." First Monday - a Great Cities Initiative of the University of Illinois at Chicago Library: Matthew Allen - *Web 2.0: An argument against convergence* (2008)

³ Henrik Glimstedt (2008-02-05)

⁴ Motorola: Graphics Library (2008-05-02);

Nokia: Story of Nokia – The Move to Mobile: 1968-1991(2008-05-02);

Sony Ericsson: Sony Ericsson History (2008-05-02)

players in the market, more specifically, their destruction, and the consequent creation of new firms.⁵ So, why have these major changes been absent? Is theory missing something? One thing that is noticeable is that, in spite of the technological change, the business model for the mobile phone producing companies has in principle been the same since the 1980s – to make money directly from selling phones.⁶ Is it possible to divide the changes in the industry in technological changes and changes in the business model? A reasonable suggestion would be that a new player has to enter the market with new technology as well as a new business model in order to cause the creative destruction that Schumpeter talked about.

One of the most evolving happenings in the mobile telecom industry recently is the rumor of Google entering the mobile phone market.⁷ This will most likely take place via the new open source platform Android⁸, which Google has developed in cooperation with the Open Handset Alliance, a consortium of companies within the telecom market, launched in November 2007⁹. The rumor has it that Google will continue by launching a mobile phone, named a “Gphone”¹⁰ by the press, based on Android.¹¹ If entering the mobile phone market, Google could be expected to bring their business model of making money on online advertising.¹² An entry by Google would potentially have dramatic effects on the mobile phone market because of the Android platform’s ability to adapt to each individual user and fast-moving Internet trends¹³, and because of Google’s business model which would be new to the market. The Gphone could potentially enable people living in economically less developed parts of the world to get their first Internet connection, thanks to a Gphone and its potentially negligible price that could be made possible thanks to Google’s business model. Could these changes be the combination of new technology and new business model needed to revolutionize the mobile phone market? And how would this affect traditional mobile phone producers like Sony Ericsson? Would it be a threat? This thesis will treat these issues.

⁵ McGee et al. (2005): 312-313

⁶ Henrik Glimstedt (2008-02-05)

⁷ The Wall Street Journal Online - *Can Google-Powered Phones Connect With Carriers?* (2007)

⁸ Times Online - *Video review: Google-powered phone* (2008)

⁹ Open Handset Alliance: press release on the launch of Android - *Industry Leaders Announce Open Platform for Mobile Devices* (2007)

¹⁰ As an analogy to Apple’s “iPhone”

¹¹ Times Online - *Video review: Google-powered phone* (2008)

¹² The Economist: Business - *From iPhone to gPhone?* (2007)

¹³ Open Handset Alliance: press release on the launch of Android - *Industry Leaders Announce Open Platform for Mobile Devices* (2007)

1.1 Background

Currently the standard design of leading software platforms for mobile phones, like Symbian and Microsoft Windows Mobile (Microsoft Mobile), is a proprietary one. This means that the platform is not easily accessible to independent software programmers who want to create applications adapted to it.¹⁴ Assuming that Google enters the market using Android, the old rules of telecommunication of using proprietary mobile phone software platforms will be affected. Technologically, Android will make it possible to faster develop software for the mobile phones, thanks to the fact that the platform is based on open source, which makes it very easy for independent software programmers to create applications adapted to Android.¹⁵ In addition, the previously used business model will be challenged by a new one. Google's main revenue comes from advertising.¹⁶ By providing Internet applications that are most up to date and popular among customers, advertisers will be attracted through increased exposure possibilities and users will have more opportunities to click on online ads. This implies more money for Google.¹⁷

Google could benefit from an entry into the mobile phone industry, not mainly by selling phones per se, but from increased revenues from users clicking on their online ads when more people get access to mobile Internet, and these Internet services become increasingly similar to Internet services on a connected PC thanks to the Gphone. For the customers this means that they will be able to get popular Internet applications to their mobile phone faster than before. For other mobile phone producers, this would imply that their existing platforms become too slow in adapting to Internet trends, which may out maneuver them from the market as they will be unable to develop software fast enough for the customers and their constantly changing use of Internet services. In addition, their business model might become outdated since Google have another source of revenues than directly from mobile phone sales. If Google was to launch a Gphone it would, as earlier mentioned, most likely be based on the open source platform Android. Sony Ericsson, on the other hand, bases its mobile phones on proprietary platforms supplied by Symbian or Microsoft Mobile.¹⁸

¹⁴ BBC News: Technology – *Q&A: Google's Android* (2007)

¹⁵ *Ibid*

¹⁶ Google AdWords (2008-03-02)

¹⁷ BBC News: Technology – *Q&A: Google's Android* (2007)

¹⁸ Businessweek – *Microsoft: Making Mobile Progress* (2008)

1.2 Formulation of the problem

Mobile phone manufacturers today face the challenge of Google's potential entry on the mobile phone market via the open source platform, Android and a Gphone. This not only gives rise to another competitor and new technology on the market, but also the competition from another business model. In addition the borders between the telecom, computer and Internet industries are dissolving rapidly. The authors of this thesis want to investigate how the possible entry of a new kind of player on the mobile phone market will affect an existing player on the market, such as Sony Ericsson. Theory suggests that the new technology of open source platforms in mobile phones will out maneuver the existing proprietary platforms. In addition, theory also highlights the importance of being compatible with other players in the market as the telecom market is an obvious case of a network economy. This implies strong benefits with using an open platform. The other aspect is, which theory might neglect, the business model. The research question will therefore be:

Is Google's entry into the mobile phone market a threat to the survival of traditional mobile phone manufacturers such as Sony Ericsson?

1.3 Purpose

The purpose of the thesis is to analyze if an entry by Google on the mobile phone market should be viewed as a threat to the survival of an existing mobile phone manufacturer, such as Sony Ericsson, and to investigate if the suggestion that both a shift in technology and a shift in business model is required to apply existing theories of creative destruction to the mobile phone market. The authors of the thesis will try to make the reader aware of some central strategic issues in the mobile telecom industry today. In that way it is possible to gain an understanding how mobile phone producing companies should act when the rules of the game are changing.

1.4 Delimitations and assumptions

The thesis is based on the assumption that Google will launch a Google-branded mobile phone, and that this phone will be based on Google's Android platform. Obviously, the credibility of such an assumption could be discussed, and accordingly, arguments in favor of the credibility of such a statement will follow in the analysis section. The reason for placing

these arguments at such a late stage in the thesis is that the relevance of the arguments will become clear throughout the thesis.

The authors have decided to focus on a possible threat that Google's entrance may have on mobile phone manufacturers. Possible effects on the mobile network operator market or other related markets in the mobile industry will not be treated. Certain technological standards and phenomena will briefly be explained out of respect for a reader that is unacquainted with the subject. However, any intricate explanations about the specifics of the technology will not be found in this thesis, as the purpose is not to explain the technology but rather the strategic effects of a possible Google entry. There will be no explicit numerical calculations or estimations of profits, costs or timeframes associated with the conclusions drawn.

When mentioning "traditional mobile phone manufacturers", the authors will specifically refer to the five largest players on the mobile phone market, defined later on in the thesis. Sony Ericsson was chosen to characterize the mobile phone manufacturer since the company represented one of the average larger manufacturers. In addition, the search for information about, and the contact with, this company would be facilitated as some forms of contact were already established when it was decided that this thesis should be written. Another reason to why the authors chose Sony Ericsson as the existing mobile phone manufacturer to study is that it does not at all have as firm a position on the mobile phone market as Nokia¹⁹. Because of this, a Gphone is obviously possibly a bigger threat to Sony Ericsson than to Nokia.

It is possible to argue that Apple's iPhone is already very well adapted to the Internet and that it will dramatically change the mobile phone market. However, there is an important difference here. Google will most likely base their phone on Android, which implies a technology shift. This is not the case for the iPhone. In addition, the business model of Google and the possibility to bring it into the mobile phone market is something that Apple does not have.

Finally the authors want to stress that this thesis is not written for, or by request from Sony Ericsson or Google in any way. Information provided by employees from these companies is

¹⁹ Strategy Analytics (on EDA Blog) – Q4 2007 Global Handset Market Share (2008)

strictly limited to basic facts accompanied by footnotes. All other information and analyses originate from other sources or the authors themselves.

1.5 Contribution

By examining how an existing mobile phone manufacturer, such as Sony Ericsson, will be affected by an alternation of the existing market rules, the ambition is to gain an understanding of how players should view new entrants from a different industry, bringing new technology and a new business model. This specific subject is found to be especially interesting as the authors have not found any official reports on what will happen to the existing mobile phone manufacturers if and when Google introduces a Gphone. It is recognized that it is somewhat speculative to write about a possible entry on the mobile phone market. However, that is what makes it interesting and provides the possibility to contribute with something new. In addition, strong arguments in favor of a Google entry on the mobile phone market will be presented later on. The authors also hope to be able to contribute to theories that previous researchers have presented, and that are used for the analysis. As the old market rules are changing so may also the suitability to use some of the theories for explaining market changes.

1.6 Thesis disposition

The thesis will start off by presenting already existing theory within the strategic field of the telecom industry. This part is divided into mainly two parts: research focused on creative destruction, including s-curves and research focused on network externalities, including standards. After this, the method used for the thesis process will be discussed. Then, empirical findings will be presented. First, a general overview of the mobile telecom industry will be given as to give the reader an understanding of the technological development and the different players. Second, relevant information about Sony Ericsson will be presented, and finally Google and its Android mobile software platform will be put forward. Thereafter, an analysis will be presented, where the authors will try to answer the thesis' research question. This will be followed by a conclusion, a discussion of the thesis and suggested further research.²⁰

²⁰ As some different terms might be somewhat confusing and difficult to understand, but very important for the understanding of the thesis, a dictionary with the most important concepts will be presented in appendix 1.

2. Theoretical framework

The purpose of this section is to present the theoretical framework that will be used in the analysis of the forthcoming empirical data. First, the theory of creative destruction and the S-curve will be presented. Thereafter, network externalities and theoretical aspects of standards will be put forward. The section will be concluded with a summary in order to facilitate the reader's understanding of the different theories.

The basic phenomenon that is observed in the telecom industry today is that the border towards the Internet industry is starting to dissolve.²¹ Technological innovations and applications, such as mobile phone cameras and the possibility to use the phone to send e-mails, which connect telecom and Internet, are affecting the telecom market. The theoretical framework that will be used in this thesis draws from mainly two lines of research. Firstly, Schumpeter's theory of *creative destruction* will be put forward. Research based on the Schumpeterian view has sought to explain how new, innovative technology is causing a shift from established technologies to the new technology. The new technology is replacing the old one, which becomes superfluous and disappears. It becomes crucial for mobile phone manufacturers, such as Sony Ericsson, to evolve with the process in order to cope with this change. Otherwise they face the risk of not being able to survive as a company.²² Second, the theory of *network externalities* will be presented. The telecom industry can be identified as a network industry, where the value of a product increases if more consumers use it. This is very much the case for the mobile phone market where applications have to be compatible with each other in order for consumers to see an increase in the value of the product. The compatibility between network products and the use of the same standards becomes more important as the network grows.

These two main theories are connected as the technological change is affecting players on the market, both in terms of keeping up with the technological change but also to make sure that the technology used is up to date with what technology everyone else in the industry is using in order to maintain a strong part of the network. Both themes are a major part in the flux that the telecom industry is in today.

²¹ Sten Minör (2008-04-15)

²² McGee et al. (2005): 312-313

Alternative theoretical frameworks used in research regarding the telecom market are theories such as the importance of complementary assets²³ and the resource based view²⁴, which rather focus more on how a company is organized internally. However, by concentrating on creative destruction and network externalities, the focus will be on the changing telecom market, providing a more valid approach for the purpose of this thesis. Alternative approaches will therefore be excluded even though their importance is recognized.

2.1 Creative destruction

The Schumpeterian process of creative destruction is often used as a basis for understanding markets that are undergoing technological change.²⁵ According to Schumpeter (1976) there are several recurring themes within a changing market. Firstly, changes in technology can be regarded as competence destroying as it completely changes the knowledge base within the industry. This can lead to new dominant products as well as new powerful competitors. The result of new competitors entering can have serious effects on the incumbent firms' survival. Secondly, when the technology is changing, firms existing outside the industry may be able to gain market shares within a number of sub-markets. The entry into these sub-markets can be a very complex process where expansionary moves are done gradually. Third, the possibility of entry determines, in many ways, the general conditions on the market. Thus, the industry structure is the result of both exogenous change and strategic decisions of the firms. Fourth, as the technology changes, the market grows. As a consequence of change new segments within the market emerge, which are quickly filled up. The industry borders are being redefined. This generates new dimensions of competition, where new ways of product differentiation, as well as new possibilities of segmentation for suppliers, are created.

The above stated issues result in mainly two different implications. First, technology can change the industry structure. As the technology change implies a shift in the market conditions on demand as well as supply side, this changes the nature of competition, but also the entry barriers to the market. Secondly, companies may take advantage of this technological change, as the change functions as an asset within the firm. The firm should invest in technology, in creation of assets that are difficult to imitate, and therefore the

²³ Teece (1986)

²⁴ Grant (1991)

²⁵ McGee et al. (2005): 312

company can compete in markets where it cannot be imitated. By investing in R&D and differentiating itself, a company that can gain competitive power might even change the structure of the industry. However, it is important to note that an entry barrier created by a company can turn out to be something that prevents the same company from making further investments, having a negative impact on the firm. A firm that is successful on the market is therefore a firm that constantly re-defines itself, as well as the industry boundaries and continues to innovate and evolve as a firm.²⁶ In addition, there is a risk of companies focusing too much on what is disappearing from the market instead of trying to notice what is trying to be created.²⁷ In other words, it is easier to see the destructive side of creative destruction, than it is to see the creative side.²⁸

2.2 The S-curve

2.2.1 Basics

The S-curve explains in many ways the importance of technology strategy. The curve shows the level of technology performance over a period of time or amount of effort. As figure 1 shows, in the beginning of one curve the performance of a new technology is low in comparison to the amount of effort put down in the development. The steeper the curve gets, the higher is the productivity. In the beginning, before results are significant, the degree of effort is high compared to performance. When the first difficulties of learning how the technology works are passed, there is a large improvement in the level of performance, without having to make too much of an effort. This phase normally consists of a few years. Then the technological limits are drawing closer and the amount of effort has to increase very much in order to see a result in increased performance.

²⁶ McGee et al. (2005): 312-313

²⁷ Weber (2004): 15

²⁸ Schumpeter (1976)

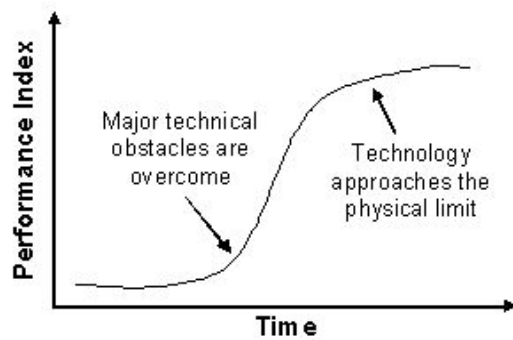


Figure 1. *The S-curve*

When the technology is approaching its physical limit it is common that a new technology takes over in order to meet consumers' demands. This shift can be seen in figure 2. As the figure shows, often several s-curves exist in parallel with each other, struggling to be the new technology, replacing the old one. It can be extremely difficult to interpret exactly where the company is on the curve. Being able to anticipate the shift between technologies will give the company a competitive advantage, increasing its chances to survive in the market after the change. A successful company knows when to start looking for new technologies and how much effort to put into a technology.

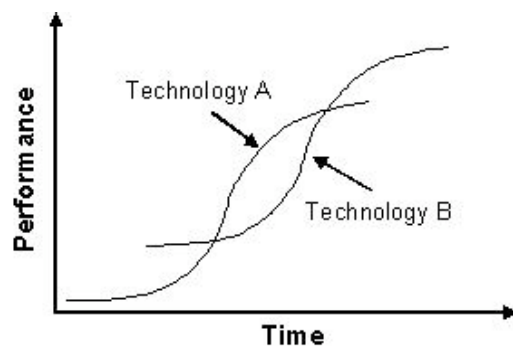


Figure 2. *Two parallel S-curves*

Most companies are in the steeper phase of the curve, where the strategic handling of the technology is in focus. There, the companies develop new products as well as making processes faster than their competitors'. Interestingly, the cost of entering the market late in the technological process is higher than the increase in development costs of faster processes, in the steep part of the curve. In addition, some companies have also learned how to cooperate in order to reduce development costs. The result is steeper s-curves.

An important aspect of the curve is once again in the steep phase of the curve and regards the problem of handling the technology that focus on productivity instead of efficiency. The efficiency lies in determining which s-curve the company is planning to follow. The productivity lies in how steep the curve is. Efficiency concerns strategy while productivity concerns the use of resources. Almost always, it appears as though sticking with the old technology will keep a higher degree of productivity as it takes a while to master the new technology and reach the same level of productivity. The cost for progress in an established technology is simply compared to the costs of progress in a new technology. However, by doing this it is very easy to ignore the fact that someday the new technology will be much more productive than the established one.²⁹ As Kelly (1999) puts it, “Productivity is the wrong thing to care about in the new economy. The problem with trying to measure productivity is that it only measures how well people can perform the wrong work.”³⁰ However, this is a difficult trade-off as it is a question of taking resources from an established, profitable process. Furthermore, a lot of resources are used in order to defend the already established s-curve, instead of shifting to a new one. With the help of the s-curve it is possible to calculate when a new technology is getting closer and when a large technology change will come.³¹ The biggest challenge is therefore to see when new technologies are threatening and to determine when to successfully shift to the new technology. Miscalculations may lead to failure for the established firm and give attackers or entrants to the market an advantage.³²

2.2.2 Innovator's dilemma

With respect to the s-curve framework, Christensen (1997) puts forward what he calls the innovator's dilemma in confronting different types of innovation. He makes a distinction between sustaining technologies, which encourage improving product performance among existing firms, and disruptive technologies. Disruptive technologies result in worse short-term product performance, which may imply firm failures. The dilemma for incumbent firms is characterized by the fact that any adoption of disruptive breakthrough technologies will cause cannibalization on purchases of existing products by the average customers. The revenue loss might lead these firms to implement breakthrough technologies very slowly. By doing this, the incumbents allow other firms to take advantage of the new product pathways left open.

²⁹ Foster (1986): 79-98

³⁰ Kelly (1999): 190

³¹ Foster (1986): 79-98

³² Christensen (1997): 39

Kim and Mauborgne (1999) further develop the notion of technological innovation to value innovation. Value innovation rejects competitive strategies based on imitation but does not necessarily need new technology in order to succeed. The major inputs for value innovation are knowledge and ideas, new product concepts etc. It brings forward the buyer and puts her in the centre of strategic thinking. Like Christensen, Hamel (2000) also underlines the importance of innovation as being central in order to maintain corporate growth. And in accordance with Kim and Mauborgne, Hamel believes imitative strategies, based on competitive strategy analysis, has no basis in today's market place.

2.3 Network externalities

2.3.1 Basics

A network can be described as a number of links between nodes and the concept of network externalities can be defined as "the increasing utility that derives from consumption of a product as the number of other users who consume the same product increases".³³ It can also be described as a chicken-and-egg phenomenon.³⁴ Some of the main concepts of network externalities are the battle for critical mass, expectations management³⁵ and positive feedback³⁶. Expectations management focuses on how consumers choose products in a network economy. The expectations of the consumers are central as consumer utility depends on the number of consumer buying the same products. If a large number of users expect everyone else to use the same network product then the number of users will increase. They expect everyone else to use the product, therefore they also do it, and stop use the rival's product. Thereby the battle of the critical mass, the number of consumers needed for a network to be successful, will be won. Therefore, the sales numbers are often overstated in order to give the consumers the perception that many consumers are already using the product and thereby increasing their willingness to purchase the same good.³⁷ This will create a so called "winner takes all" phenomenon. One of the exceptions to this though, is "regulated markets with strong interconnection between competing platforms".³⁸ Positive feedback refers

³³ Katz and Shapiro (1985)

³⁴ Funk (2004): 2

³⁵ McGee et al. (2005): 466. Shapiro and Varian (1998): 13

³⁶ Shapiro and Varian (1998): 173

³⁷ Bensen and Farrell (1994): 118-119

³⁸ McGee et al. (2005): 467

to the fact that the value of a product rises when more consumers interdependently decide to use the product. But, as the network grows the marginal consumer becomes less valuable.³⁹

2.3.2 *The supply chain*

How the supply chain in a network economy is organized is yet another important aspect. The structure of the supply chain is starting to look more like a system of co-operation, instead of having the normal players of manufacturer, suppliers and distributors. Each member of the network may very well be in collaboration with other members. An example is compatibility between software and hardware. This information exchange implies a power balance in the supply chain, as all of the players are highly dependent on each other. It is therefore important that they can co-operate, giving rise to the importance of common standards. However, it also creates relationships between firms that are less stable, as there are more players on the market that they can co-operate with.⁴⁰ This new value chain, which is more structured like a web than a chain, is giving rise to a self-organizing system. Kelly (1995) argues that this system leads to the concept of “co-evolution”. This theory consists of understanding the value chain in the light of its members’ needs instead of the own company’s. By adapting to other members’ needs the profit of the own firm will increase. The importance of co-operation further enforces what is presented in the following part on standards organizations and their value. Companies have started to build alliances in order to gain the rewards of positive feedback.⁴¹

2.3.3 *Standards*

Another factor that plays an important role in scale effects when it comes to network economies is technology standards. Thanks to technology standards, more consumers are reached and the network can grow. In addition, they can reduce costs, uncertainty in new products and speed up development of products. Standards can also create consumer lock-ins and large switching costs if one company decides to deviate from the common standard.⁴² Lock-ins and switching costs give competitors either an advantage or a disadvantage. The

³⁹ McGee et al. (2005): 468

⁴⁰ McGee et al. (2005): 474-477

⁴¹ McGee et al. (2005): 480

⁴² McGee et al. (2005): 472

extra costs can be used in order to prevent consumers from switching to other technologies or networks.⁴³

There are mainly two reasons why standards play an important part in evolving markets. First, the expectations of consumers play a vital role in the success and survival of networks. As described previously, the expectations of consumers that other consumers will use the same network is what gives a network its strength. Users are reluctant to make investments in a network if they are uncertain of how many other users that will join the network. By having a set standard, these fears may be overcome and consumers can be reassured that the network technology will be implemented. Second, the interoperability between different systems is important to take under consideration. In a network economy it is crucial that the different players can communicate with each other. Networks depend to a large extent on alliances with producers and suppliers and therefore have to have a common way of communicating with each other, in terms of interoperability.⁴⁴

According to Economides and Flyer (1997), *“Firms that compete in markets where network externalities are present face unique trade-offs regarding the choice of a technological standard. Adhering to a leading compatibility standard allows a firm’s product to capture the value added by a large network. However, simultaneously the firm loses direct control over the market supply of the good and faces intra-platform competition. Alternatively, adhering to a unique standard allows the firm to face less or no intra-platform competition, but sacrifices the added value associated with a large network.”* This indicates clearly that there is a trade-off between adjusting to others and losing the control.

2.3.4 Large, open systems

Kelly (1999) means that it is not scarcity but overflow that rules the network economy - by reproductions, copies and repetitions. Whatever can be done is done in excess. This creates value and contributes to open up closed systems.⁴⁵ As the value of an action within a network economy increases exponentially with the number of networks it flows through, it is desirable to be able to flow through as many networks as possible. It’s also preferable to avoid closed

⁴³ McGee et al. (2005): 482

⁴⁴ Glimstedt (2003): 54-55

⁴⁵ Kelly (1999): 57

systems, as they sooner or later have to open up or die.⁴⁶ Kelly also argues that in order to maximize innovation the company needs to benefit from whatever is happening in the outskirts of the technology. This can be what triggers something new.⁴⁷

2.4 Summarizing the theoretical section

To conclude, the two main areas of research put forward are the theories of creative destruction and network externalities. Within the theory on creative destruction the s-curve plays an important role. It shows more graphically the shift between established and new technologies. It also illustrates the difficulties for companies of deciding on when to shift to the newer technology. This is also the implication of the innovator's dilemma.

Network externalities highlight the importance of consumer expectations and interoperability between different players in a network economy. A network economy functions more as a web rather than a chain of different buyers and sellers. This further increases the importance of standards, as they result in increased interoperability. Large, open standard systems are preferable in a network economy as the value of an action increases exponentially with the number of networks it flows through.

Regarding the relevance of the theories put forward. The discussed theories of Kim and Mauborgne as well as Hamel are somewhat contradictive to the notion of network externalities. Kim and Mauborgne and Hamel rejects imitative strategies while theories of network externalities instead highlights the importance of using the same methods as the other players in the market in order to reach as large a network as possible.

Kelly puts forward the importance of looking in the outskirts of the industry for new technology. This fits very well with the notion of the s-curve, where companies have to pay attention to where they are on the curve in order to capture and start using new technology. The s-curve is very interesting but is a bit complicated in reality as it is difficult to calculate where on the curve you are exactly.

⁴⁶ Kelly (1999): 67-69

⁴⁷ Kelly (1999): 119

3. Research design and method

This section aims to clarify the method and research design used for this thesis. The type of purpose will be defined as well as the choice between a quantitative and qualitative study. The choice between inductive and deductive approach will be clarified as well as the levels of validity and reliability. Finally, the primary and secondary data used will be treated.

3.1 Method

This thesis should mainly be seen as having an *understanding purpose*. According to Andersen (1998), the intention of a scientific publication with an understanding purpose is to provide understanding of a phenomenon. This is slightly different from a publication with an explanatory purpose.⁴⁸ The thesis could be considered to be of an understanding purpose since the authors' ambition is to give an understanding of the threat that Google's Gphone might constitute to established mobile phone manufacturers. Arguably the thesis could also be said to partially be what Andersen calls "*explorative*", considering that it is trying to explore unknown fields in the sense that Google has not launched a mobile phone yet.⁴⁹

When describing the method and research design, one of the central distinctions to make is to decide if the scientific study should be quantitative or qualitative. The qualitative method is generally used when trying to provide understanding of a phenomenon and the quantitative method is generally used when trying to provide explanations. Hence, it follows that the methodology used in this thesis is *qualitative*. As Andersen writes, the authors of this thesis aim to "provide a deeper understanding of the problem studied" (translation by the authors of this thesis).⁵⁰

Another central definition to make is whether the study is inductive or deductive. Trochim and Donnelly (2007) describe a deductive approach as working "from the more general to the more specific" and an inductive approach as "moving from specific observations to broader generalizations and theories".⁵¹ Since a decision was first made to study Google's entry into the mobile phone market, empirical information was collected and theories were later applied

⁴⁸ Andersen (1998): 19-20

⁴⁹ Andersen (1998): 18

⁵⁰ Andersen (1998): 31

⁵¹ Trochim and Donnelly (2007)

to analyze the case, the study is conducted in an *inductive* way. The decision to pursue an inductive study came naturally since the idea of analyzing a possible entry into the mobile phone market by Google was the spark that set the thesis process off.

Finally a note on validity and reliability. Befring (1994) defines the central question regarding *validity* as whether observed behaviors or phenomena give a true picture of reality. The amount of *reliability*, indicates the quality of the study as an answer to the question of how accurate the measurements or estimations are, given that validity has been obtained. The concepts of validity and reliability are always difficult to measure when it comes to qualitative studies.⁵² Regarding validity, the authors' tutor, Associate Professor Glimstedt, is a well recognized scholar in the field of mobile communications and strategy and his guiding should therefore assure a high level of validity in these fields. When it comes to reliability, the study would have to be considered to reach a sufficient level, considering the sources of the empirical base. Two factors should guarantee sufficient reliability; firstly, a great number of sources have been used when constructing the picture of the mobile telecom business and its players presented in the empirics part, and secondly, a large part of the sources used are recognized, respected publications such as the Economist, the Wall Street Journal and the Times, as well as official information from Google and Sony Ericsson.

3.2 Type of data used

A large part of the empirics is based on secondary data. Articles from industry papers such as Telecompaper, Mobil, and Silicon.com, business papers such as the Economist and the Wall Street Journal, and newspapers such as The Korea Times and Svenska Dagbladet have been complemented by published books such as *The Google Story* (Vise, 2005) and *The Mobile Revolution* (Steinbock, 2005), official information from Google, Sony Ericsson and Motorola, and earlier academic publications such as *Innovation and Competition Strategy in 3G Mobile Telecommunications Industry; a case study of UMTS* (Montero Arizmendi and Teteris, 2004). The articles first mentioned are mainly referred to in online format. When it comes to the primary data, three sources exist. Interviews with a manager at Sony Ericsson and a market expert in the telecom industry have been complemented by discussions with and information from Associate Professor Glimstedt. The decision to chose mainly secondary data

⁵² Befring (1994): 60-63

was made fairly early in the process, when the authors realized that statements on how a Google entry could possibly pose a threat to traditional mobile phone manufacturers were almost impossible to get from people employed by Google and the traditional mobile phone manufacturers, since these kind of statements could be considered to reveal confidential strategies. Another reason is that the two companies mainly discussed in the thesis – Google and Sony Ericsson – are very well known and established companies, on which there exists plenty of secondary information.

4. Empirics

The following section will present the empirical background used for the analysis of this thesis. First, a brief history of the mobile phone will be presented. Second, a description of the mobile phone market today will be made. After this, the emergence of mobile network systems will be treated, as well as an overview of the structure of the mobile telecom industry. Moving on, the mobile phone producer Sony Ericsson and the Internet search-engine creator and operator Google, and its new mobile phone platform Android, will be examined. Finally the concept of open source will be explained.

4.1 A brief history of mobile phones

Mobile phone communications had been introduced already in 1947, but up until Motorola presented the first prototype of a modern mobile phone in 1973, the mobile phones had to be installed in cars. They were therefore rather car-phones than mobile phones.⁵³ Motorola's phone was commercially launched in 1983.⁵⁴ It had a weight of almost one kg.⁵⁵ During the mid 1980s mobile phones grew in popularity, but were still mainly designed to be used as car-phones, or had to be carried around like a briefcase with a large battery.⁵⁶ By 1987 there were more than one million mobile phone subscribers in the USA.⁵⁷ In the early 1990s, the mobile phones had become much lighter and smaller in size and the mobile network systems had been much improved, leading to a dramatic increase in mobile phone usage.⁵⁸ In 1992, the first Short Message Service (SMS) message was sent⁵⁹ and the service has become incredibly popular⁶⁰. In the mid 1990s mobile network operators introduced prepaid mobile phone cards. This further increased the popularity of the mobile phone⁶¹ and at the turn of the millennia, the mobile phone camera was introduced⁶². In 2002, the services of sending multimedia messages through the Multimedia Messaging Service (MMS), was launched throughout Europe.⁶³ In the first years of the 21st century the importance and variety of mobile phone services increased substantially as gaming, e-mail and ring tones, as well as early attempts at watching video

⁵³ About.com: investors- *Selling The Cell Phone; Part 1: History of Cellular Phones*. (2008-04-26)

⁵⁴ TechFaq- *What is the History of Cell Phones?* (2008-04-26)

⁵⁵ About.com: Investors - Martin Cooper - *History of Cell Phone* (2008-04-26)

⁵⁶ TechFaq - *What is the History of Cell Phones?* (2008-04-26)

⁵⁷ About.com: Investors - *Selling The Cell Phone; Part 1: History of Cellular Phones* (2008-04-26)

⁵⁸ TechFaq - *What is the History of Cell Phones?* (2008-04-26)

⁵⁹ Engineering and Physical Sciences Research Council - *Mobile Phone Technology* (2006)

⁶⁰ MobileTracker - Cell phone news and reviews - *SMS More Popular Than Voice* (2003)

⁶¹ Newsdesk - *Kontantkortet firar 10 år i Sverige* (2007)

⁶² American Heritage - *The Cell-Phone Revolution* (2007)

⁶³ Eriksson and Norlander (2003): 24

became central parts of the mobile phone world. In the course of 2007 the number of total mobile phone subscribers in the world exceeded two billion.⁶⁴ The mobile phone has evolved from a pure traditional voice telephone to a utility that should be able to constantly keep the customer up to date with the latest news and trends in the world, as well as always satisfying the customer's ever increasing need for stimuli in the form of music, games and movies.⁶⁵

4.2 The mobile phone market today

The size of the mobile phone market in terms of revenues is expected to increase from USD 117 billion in 2006 to USD 131 billion in 2007. This growth originates to some extent from an expansion in emerging markets.⁶⁶ Telecom Trends International, a market research and consulting firm⁶⁷, predicts that global revenues from mobile phone sales will decrease to USD 125 billion in 2012. Even though the number of mobile phones produced will increase from 815.2 million in 2005 to 1.7 billion in 2012, the fall in revenue will occur due to a decrease in prices charged to the customers.⁶⁸ In terms of market share, the three major players on the mobile phone market are Nokia, with a 39.1 per cent market share, Samsung, with a 14.4 per cent market share, and Motorola, with a 10.2 per cent market share. LG is the fourth largest player, with a market share of 8 percent while Sony Ericsson is found in fifth place, with a market share of 7.5 per cent.⁶⁹

Nokia is mainly focusing on lower-end models, which provides the company with almost 90 percent of its total mobile phone revenues.⁷⁰ Samsung, on the other hand, is putting a lot of effort into the high-end segment with such features as camera and touch screen phones.⁷¹ Some argue that Samsung is the only possible threat to Nokia's position in the market, but that Samsung must decrease its focus on high-end phones to be a credible threat.⁷² Another important player is Motorola, which states that they "are particularly focused on developing a broader offering of 3G products for the Multimedia product segment."⁷³ Sony Ericsson has so

⁶⁴ American Heritage – *The Cell-Phone Revolution* (2007)

⁶⁵ Henrik Glimstedt, (2008-02-05)

⁶⁶ Telecompaper- *Mobile phone sales to grow by 8.42% a year to 2011- study* (2008)

⁶⁷ Telecomtrends.net (2008-03-17)

⁶⁸ America's Network, *Converged Communications at Work- Mobile Handset Market Booming* (2006)

⁶⁹ Mobxtreme – *Global Handset Market Share*. (2008)

⁷⁰ Businessweek - *Are handset sales set for a fall?* (2008)

⁷¹ The Korea Times - *Samsung's Handset Market Share in N. America Tops 20%*. (2008)

⁷² Telecompaper- *Mobile phone sales to grow by 8.42% a year to 2011- study* (2008)

⁷³ Motorola 2007Annual Report (2008): 2

far been focusing mainly on the high-end segment of the mobile phone market.⁷⁴ However, the company now says that its ambition is to become top three, and a major focus would therefore be to create a stronger presence in developing markets but also in completely new markets on a global scale. Finally, LG is trying to establish itself in high-end segments with premium models such as "Viewty". However, the company is also trying to expand in fast-growing emerging markets.⁷⁵ The table below shows the market share of each mobile phone manufacturer and which segment they focus on.

<i>Manufacturer</i>	<i>Market share</i>	<i>Main segment focus</i>
Nokia	39.1 %	Low-end, emerging markets
Samsung	14.4 %	High-end
Motorola	10.2 %	High-end
Sony Ericsson	7.5 %	High-end, planning to put more focus on low-end
LG	8 %	Both high-end and low-end

Table 1. *Mobile phone manufacturers and their main segment focus, 1Q 2008 numbers.*

There are no clear definitions of the high-end segment and the low-end segment. The authors define high-end phones as expensive phones with a lot of fancy features such as cameras, music players and a possibility to access the Internet. The low-end phones will be defined as low-cost phones with no or very limited features in addition to the basic voice, phonebook and SMS functions.

A new competitor on the mobile phone market is Apple, producer of Mac-computers and the iPod, which entered the mobile phone market in June 2007 with a phone called "iPhone".⁷⁶ The iPhone is a "smart phone" initially priced from USD 499 to USD 599, and it quickly became much hyped due to the Apple brand and products like the iPod. In addition, the phone is better adapted to Internet use than most of the existing mobile phones⁷⁷, but runs on a proprietary platform.⁷⁸ There are no clearly defined criteria for what a smart phone is. Some

⁷⁴ Henrik Glimstedt (2008-04-15)

⁷⁵ Reuters- *LG says can win market share from Motorola* (2008)

⁷⁶ MarketWatch- *Apple hits iPhone sales target ahead of forecast* (2007)

⁷⁷ USA Today- *Technology- Apple's iPhone isn't perfect but it's worthy of the hype* (2007)

⁷⁸ InformationWeek - *iPhone Unbricked, But Apple Still Locked*. (2007)

describe it as a phone with advanced multimedia applications or data applications, for which the user can add and remove applications in a relatively free way⁷⁹ and that the smart phones are somewhere between a mobile phone and a PC.⁸⁰ Samsung puts forward the fact that the mobile phone industry is now focusing on smart phones and emerging markets.⁸¹ Industry indicators estimate that this kind of phones will account for about 10 percent of the world's mobile phone market in 2008.⁸²

Regarding the mobile phone industry in general, Motorola writes in its 2007 Annual Report:

“Total industry shipments of wireless handsets increased to approximately 1.14 billion units in 2007, an increase of approximately 16% compared to 2006. Demand from new subscribers was strong in emerging markets, led by India and China. Replacement sales in highly-penetrated markets were also strong due to generally favorable economic conditions, as well as compelling new handset designs, attractive handset features and the increased rollout of high-speed data networks, all creating greater demand. Industry forecasters predict that the wireless handset industry will continue to grow over the next several years, although the annual rate of growth is expected to be in the 10% range as opposed to the approximately 20% average annual growth the industry experienced from 2003 through 2007. Continued growth is expected to be driven primarily by demand from new subscribers in emerging markets and replacement sales from the current subscriber base.”

The low-end segment is still growing in developing regions while it is maturing in North America, Europe and different parts of Asia. The report emphasizes the fact that the players in the industry are increasingly focusing on applications and services, as those will be the main sources of value in the future. Finally, some of the main factors for the manufacturers in order to remain competitive in the market are to focus on time-to-market, technology offered, performance, price and the quality and availability of service.⁸³

4.3 Open Handset Alliance members and the mobile phone market

The Open Handset Alliance (OHA) consists of 34 member companies. OHA is the consortium that stands behind the creation of Android. These 34 companies can be divided

⁷⁹ Silicon.com - *Analysis: What is a smart phone?* (2006)

⁸⁰ *Ibid*

⁸¹ The Korean Times- *Samsung's Handset Market Share in N.America Tops 20%* (2008)

⁸² *Ibid*

⁸³ Motorola 2007 Annual Report

into five groups: mobile operators, semiconductor companies, mobile phone manufacturers, software companies and commercialization companies. The mobile phone manufacturers are HTC Corporation, LG Electronics, Inc., Motorola, Inc. and Samsung Electronics.⁸⁴ Samsung and Motorola respectively today possess a larger market share than LG and Sony Ericsson is just behind LG. Regarding HTC, it's a fast-growing, innovative player on the mobile phone market that has moved on from OEM⁸⁵ production to phones sold under its own brand⁸⁶ and that is mainly focusing on smartphones⁸⁷. In 2007, HTC was ranked as "the second best performing technology company in Asia" by Business Week.⁸⁸ In this section we will focus on the US and the Indian market as those represent two important markets in terms of growth for Sony Ericsson.

HTC is currently developing a mobile phone based on Android, called "Dream". It will have a large touch screen and a full QWERTY keypad and will probably hit the market at the end of 2008. However, Samsung has also stepped up its effort to create an Android based phone.⁸⁹ Samsung's sales have increased and the company has widened the gap to third-placed Motorola.⁹⁰ The Korean electronics giant has replaced its US rival Motorola, which have been struggling for more than a year, as the world's second largest mobile phone manufacturer and expects increased growth next year. A big issue is whether Motorola can rebound and stop Samsung and restore the glory it had just after the Razz's sensational debut in 2004.⁹¹ Motorola's dominance in the mobile phone market is sliding, with the company reporting a sharp decline in sales in the first quarter of 2008 and is now under threat from both LG and Sony Ericsson. Although it introduced new models, its portfolio is not competitive enough, analysts say. Motorola is unlikely to introduce many products in the second half of 2008, a time when most competitors will bring new additions to the market, so it stands little chance of winning back its number two position. Both Kyocera of Japan and Indian consumer electronics Videocon have expressed interest in buying Motorola's handset business, valued at around USD 3.8 billion. In March 2008, Motorola decided to

⁸⁴Open Handset Alliance – Members (2008)

⁸⁵Original Equipment Manufacturer

⁸⁶HTC – About HTC (2008)

⁸⁷Phonedog.com – *HTC Cell phones* (2008)

⁸⁸HTC – About HTC (2008)

⁸⁹Wireless.itworld.com - *HTC names Google phone, 'Dream'*(2008)

⁹⁰Smarthouse.com- *Motorola Hurt As Samsung And LG Attack Market Share*.(2008)

⁹¹Businessweek - *Motorola's Pain Is Samsung's Gain*.(2007)

spin off the mobile phone division amid declining revenues.⁹² In the US, Motorola is the largest player in the market. However, by looking in table two below one can see that the size of existing players' market shares are very small. Motorola is followed by Nokia and Sony Ericsson. Motorola is the only of the top three players that is a member of OHA. However, Samsung is closely trailing Sony Ericsson. In the US, Samsung increased its share by circa 3 per cent from the third quarter of 2006 to the same quarter in 2007.⁹³

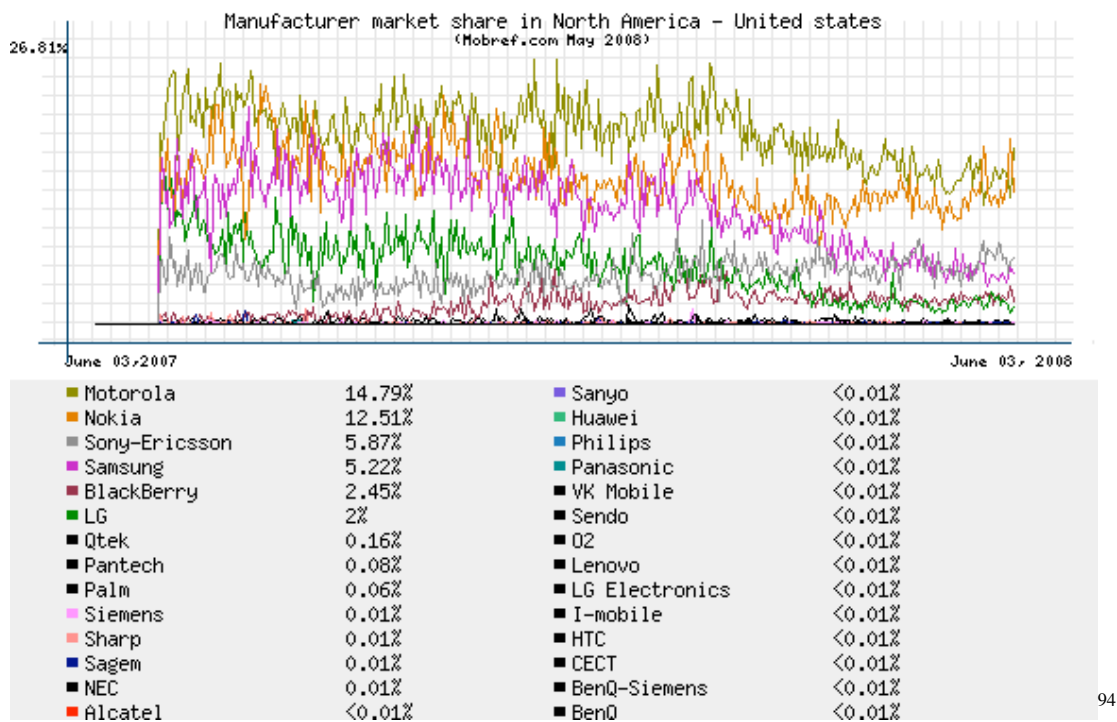


Table 2. *Market shares in the US*

Cheap cell phones for China, India, and other emerging markets are where the biggest growth opportunities lie for mobile phone manufacturers. Samsung made the transition by drawing on the experience gained in selling flat TVs. There, they put more emphasis on design and directly surveying customers to find out which TV features were absolutely necessary and which ones could be excluded. Taking a similar approach in mobile phones, the company rolled out basic phones costing around \$ 40 as well as affordable, Internet-enabled phones. Another initiative has been to go through the supply chain. It now provides

⁹² Smarthouse.com- *Motorola Hurt As Samsung And LG Attack Market Share*.(2008)

⁹³ Businessweek - *Motorola's Pain Is Samsung's Gain*.(2007)

⁹⁴ Mobref.com - US Statistics. (2008)

real-time information on which products are selling and where, so marketers could redirect shipments to the markets where demand is strongest.

Samsung has increased its market share in India from 5.7 per cent to 7 per cent over the January-March 2008 period and plan to double its turnover within two years by focusing on product innovation, and value-added services like internet experience on mobile and long battery life. Meanwhile, Motorola's market share in India dropped from 6.7 per cent to 5.9 percent and Sony Ericsson's position was unchanged at 8.1 per cent. Nokia's market share dropped from 72.3 per cent to 69.5 per cent.⁹⁵ Exact figures for May 2008 can be seen in the table below. There it can be observed clearly that Nokia has the strongest position in the Indian market, with Sony Ericsson on the second place. In Europe, Samsung is closing the gap as well, and it even rose to number one in France in October 2007, with a 33.9% share versus Nokia's 22.6%. It also chalked up gains in Britain, Germany, and Italy from the beginning of this year, data from researcher GFK show. Samsung's challenge of Nokia's dominance might not be far off.⁹⁶

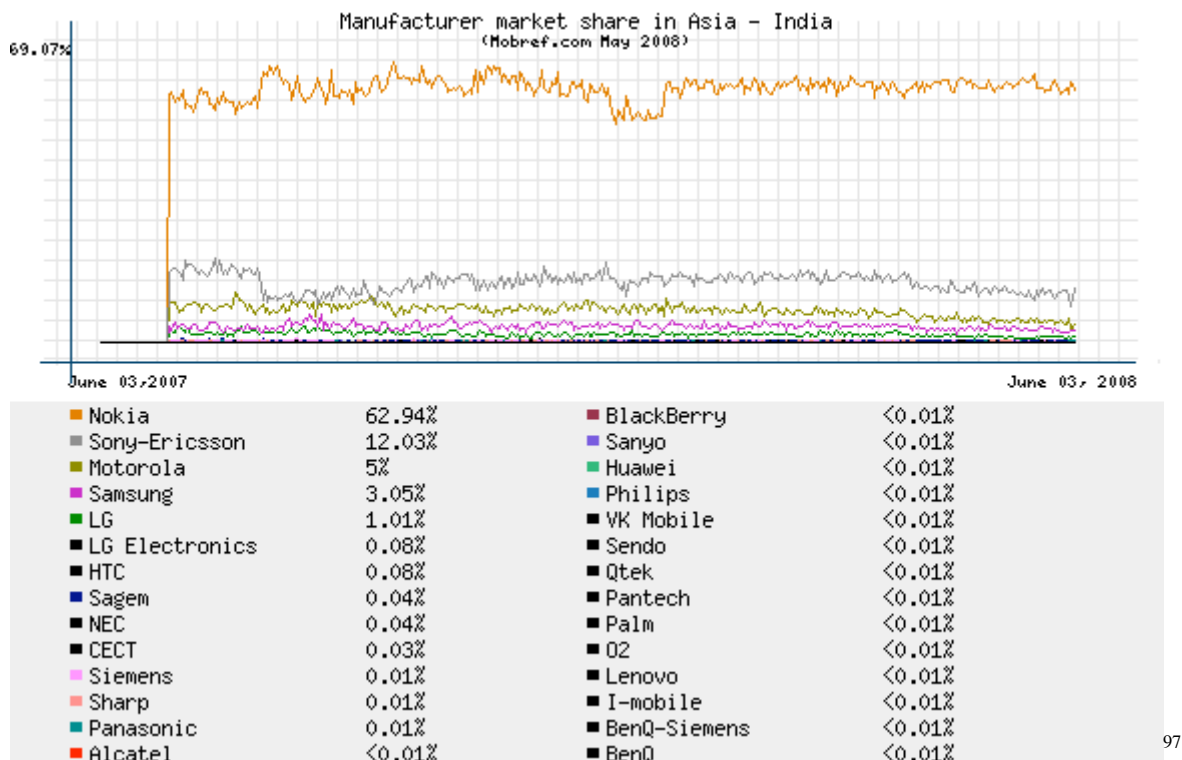


Table 3. Market shares in India

⁹⁵ Business Standard – *Samsung to Double Market Share in India*. (2008)

⁹⁶ Businessweek - *Motorola's Pain Is Samsung's Gain*. (2007)

⁹⁷ Mobref.com – Indian Statistics (2008)

4.4 A brief history of mobile network systems

Wireless telegraphy could be said to be the start of the mobile industry.⁹⁸ It can be explained as a system where a ship with a dynamo sends electrical impulses defined by the Morse alphabet into the sea, and another ship uses a telegraphic receiver to decipher these signals and turn them into messages.⁹⁹ The system was introduced in the last years of the 19th century.¹⁰⁰ This type of communication was later followed by AM radio communications, first used by police forces in the US, and later FM radio communications which turned out to be of major importance during World War II.¹⁰¹ The idea of a mobile system was formed already in 1947 at the Bell Labs, but was not commercialized until in the 1980s.¹⁰² The system was based on the principle of two-way radio communications with different system bases in different geographical areas. The system connected the different bases and made it possible to move between these areas without any interruption to the reception of radio waves.¹⁰³ In 1981, the first automatic system for mobile telephony was introduced.¹⁰⁴ It was called NTM 450. NTM is an abbreviation for *Nordic Mobile Telephony* group and this early system was established in the Nordic countries. In 1986, NTM 900 was added.¹⁰⁵ “450” and “900” represents the frequencies of 450 MHz and 900 MHz respectively, used for the two systems.¹⁰⁶ These systems are labeled 1G (first generation) mobile telephone systems.¹⁰⁷

By 1988, a new, digital, system was introduced and approved as the new European 2G (second generation) standard.¹⁰⁸ It was called GSM, which was originally an abbreviation for *Groupe Special Mobile*, however, this was later changed to *Global System for Mobile Communications*.¹⁰⁹ In 1992, a Finnish operator, named Radiolinja, launched the first commercial GSM digital mobile network.¹¹⁰ In general, the 2G networks were “developed to provide better quality, greater capacity and additional functionality than analogue systems”.¹¹¹

⁹⁸ Steinbock (2005): 4

⁹⁹ Fahie (1899): 91

¹⁰⁰ Steinbock (2005): 4

¹⁰¹ *Ibid*

¹⁰² *Ibid*

¹⁰³ “Mobiltelefoner.” Nationalencyklopedin (1994): 380

¹⁰⁴ Eriksson and Norlander (2003): 20

¹⁰⁵ Eriksson and Norlander (2003): 21

¹⁰⁶ Montero Arizmendi and Teteris (2004): 20

¹⁰⁷ Eriksson and Norlander (2003): 21

¹⁰⁸ Montero Arizmendi and Teteris (2004): 20

¹⁰⁹ Eriksson and Norlander (2003): 21

¹¹⁰ Montero Arizmendi and Teteris (2004): 20

¹¹¹ Montero Arizmendi and Teteris (2004): 20

This caused an increase in the use of data services¹¹², such as SMS, as well as an ever-increasing number of mobile phone users. A development of the 2G systems gave birth to a system called GPRS (*General Packet Radio Service*), which has been labeled a 2,5G mobile system.¹¹³ GPRS facilitates upgrading of the existing GSM networks. This would further improve the transmission capacity for mobile data communication.¹¹⁴ The subsequent and most recent step in the development of mobile telephone systems is labeled 3G (third generation) mobile system. This latest development of mobile systems was first commercially launched in Japan in 2001¹¹⁵, and the main improvements for this generation of mobile systems is that it enables an increased transferring speed of information to mobile phones and other mobile apparels.¹¹⁶ The 3G system of mobile networks is also called UMTS (*Universal Mobile Telecommunications System*) and it promises to improve the possibilities to send and receive pictures and film and to enable a usage of the Internet increasingly similar to the way it can be used on a PC.¹¹⁷ The sum of the investments made in the 3G system is substantial. However, some say it is a large failure because of substantial overinvestment and a lack of business strategies and customer demand to create adequate returns.¹¹⁸

Regarding mobile network operators, these companies provide the service of letting customers connect their mobile phones to a mobile network, a radio frequency, so that they can communicate with other mobile phone users and connect to the Internet. In order to become a mobile network operator, a company must acquire a radio spectrum license from the country in which it wishes to operate.¹¹⁹ Important international mobile network operators are Chinese China Mobile (Asia)¹²⁰, British Vodafone (Europe, Australia, USA, Asia and Africa)¹²¹ Spanish Telefonica Movistar (Europe and Latin America)¹²² and German T-Mobile (Europe and USA)¹²³.

¹¹² Montero Arizmendi and Teteris (2004): 21

¹¹³ Eriksson and Norlander (2003): 22

¹¹⁴ *Ibid*

¹¹⁵ BBC- *First 3G mobile launched in Japan* (2001)

¹¹⁶ Post- och telestyrelsen - *Faktablad: UMTS - tredje generationens mobiltelefoni* (2004)

¹¹⁷ *Ibid*

¹¹⁸ Björn Alsén (2008-05-05)

¹¹⁹ Henrik Glimstedt, (2008-03-26)

¹²⁰ chinamobileltd.com (2008-04-09)

¹²¹ vodafone.com (2008-04-09)

¹²² telefonica.com (2008-04-09) and movistar.com (2008-04-09)

¹²³ t-mobile.com (2008-04-09)

4.5 An overview of the structure and business model of the mobile telecom industry

The structure of the mobile industry is rather intricate, yet important for the reader's understanding of the thesis. Consequently, the structure can be explained as follows: The government sells radio spectrum, usually through an auction, to mobile network operators. The mobile network operators in turn sell their services, which include various combinations of access to sub-services such as in voice, SMS and Internet connection, to customers. Suppliers of different types of components, such as microchips, radio transmitters and receivers, screens, and cameras, sell their parts to mobile phone manufacturers. Producers (programmers) of applications sell applications such as calendar applications, music applications and specific applications developed with mobile network operators to mobile phone manufacturers. These mobile phone manufacturers sell the mobile phones directly to customers or to mobile network operators, who then sell packages of a network service and a phone to customers. A vast, complicated network of licenses and agreements, involving governments, mobile network service developers, mobile network operators and mobile phone producers restrict and regulate the overall mobile industry.¹²⁴

The technology and capacity of the mobile network systems has experienced a series of evolutions, most notably defined by the shifts from 1G to 2G to 3G. The technology of the mobile phones has likewise gone through many stages of evolution, such as decreases in size and weight and the introductions of new functions such as cameras and music players. In the same way, applications and services have developed and diversified from basic voice traffic to SMS and Internet connection. But a crucial fact is that the basic business model of the industry has stayed more or less the same all the time. Mobile network operators have gained their revenues by charging customers for bandwidth and mobile phone producers make profit by charging their clients for phones that use this bandwidth.¹²⁵

4.6 Sony Ericsson

Sony Ericsson Mobile Communications AB (Sony Ericsson) was founded in October 2001 as a result of a joint venture between the Japanese Consumer electronics firm Sony Corporation and the Swedish telecommunications company Ericsson. The goal was to find synergy effects between Ericsson's expertise in advanced technology and Sony's knowledge of consumer

¹²⁴ Henrik Glimstedt (2008-02-05)

¹²⁵ *Ibid*

electronics.¹²⁶ The company is owned equally by Ericsson and Sony and announced its first joint products in March 2002. Today, Sony Ericsson provides mobile multimedia devices on a global scale. Management is based in London, while research and development is located in Sweden, the UK, France, the Netherlands, India, Japan, China and the US. Apart from R&D, the company undertakes design, manufacturing, marketing, sales, distributions and customer services. Hideki (Dick) Komiyama is currently the CEO.¹²⁷ Sony Ericsson (then as Ericsson) launched their first mobile phone in 1987.¹²⁸

4.6.1 Numbers and outlook

On March 19, 2008 Sony Ericsson announced moderate sales growth of their mid-to-high end phones for the first quarter of 2008, an area where Sony Ericsson has a strong presence. This, in addition to certain component shortages for popular mid-priced phones has contributed to modest unit sales growth in the first quarter.¹²⁹

Dick Komiyama stated that: *"As discussed in the fourth quarter of 2007, the market is proving to be challenging. This has been more pronounced in the mid-to-high end replacement sector of the market in Europe, where Sony Ericsson has stronger than average market share. For the last year, Sony Ericsson has been focused on expanding the breadth of its portfolio and developing its presence in new markets to lessen its historic reliance on the European high-end sector for growth. This strategy will continue, and our objective remains to become a top three player globally by 2011. As part of this strategy, we have announced fifteen new phones and introduced a new platform to the portfolio, Windows Mobile [an operating system for mobile phones, also referred to as Microsoft Mobile], this year. We expect to start seeing a positive effect from these announcements during the second half of 2008."*¹³⁰

Sony Ericsson is planning to sell about 22 million phones during the first quarter of 2008 with an estimated average sales price (ASP) of EUR 120. Furthermore, the company has

¹²⁶ Henrik Glimstedt (2008-04-15)

¹²⁷ Sony Ericsson: *Company profile* (2008-02-28)

¹²⁸ Sony Ericsson: *Sony Ericsson History* (2008-05-02)

¹²⁹ Marketwire: Sony Ericsson Mobile Communications AB (2008-03-19)

¹³⁰ Marketwire: Sony Ericsson Mobile Communications AB (2008-03-19)

announced that it will be increasing investments in R&D, which is in line with the company's strategy to meet future growth ambitions.¹³¹

4.6.2 Products

At the Mobile World Congress in Barcelona in February 2008, Sony Ericsson launched its first phone under the new premium sub-brand Xperia. The company also presented three new models under the Walkman and Cyber-shot sub-brands.¹³² The smart phone Xperia X1, will be released in North America in the second half of 2008. The two camera-optimized Cyber-shot phones are due in mid-2008, while the music-optimized 8GB Walkman W980 is due in the third quarter. The models are designed specifically for the North American market as part of Sony Ericsson's effort to build up market shares in this area. The Xperia X1 slider, equipped with touch screen and slide-out keyboard, is Sony Ericsson's first phone based on the Microsoft Mobile platform.¹³³ During the last three years the demand for resources to R&D has increased more than linear due to increased complexity of the source code used in the newer, more advanced phones.¹³⁴

Sony Ericsson's products are divided in different series.¹³⁵ The X series and the P series are the only pure high-end focused series among Sony Ericsson's phones. Other series, such as the G, K and C series have both low as well as high end phones. It can be argued that the analysis will be less complex by only focusing on the pure high-end phones. However, these are the phones that are most likely to be able to compete with the iPhone, which is a typical example of a high-end smartphone and are therefore the most interesting for us to analyze. In addition, as will be described below, customers' value phones more the more stand-alone functions they include. This is the case for both the X and the P series. The Xperia X1 is Sony Ericsson's new flagship; it "has an elegant and unique design which gives the words first class a new meaning".¹³⁶ The phone has a large variety of different features, everything from a 3.2 megapixel camera and RSS news feedings to a touch screen and a GPS. The phone is running on Microsoft Mobile.¹³⁷ The P series on the other hand, is running on Symbian. P stands for

¹³¹ Marketwire: Sony Ericsson Mobile Communications AB (2008-03-19)

¹³² Walkman is Sony Ericsson's line of mp3-phones while Cyber-shot represent their camera mobiles.

¹³³ Palenchar (Spring 2008)

¹³⁴ Sten Minör (2008-04-15)

¹³⁵ A complete list of Sony Ericsson's mobile phone series can be found in appendix 2

¹³⁶ Sony Ericsson: Mobiltelefoner (2008-05-31)

¹³⁷ Sony Ericsson: Mobiltelefoner (2008-05-31)

PDA, which means personal digital assistant and is more of a handheld computer with a QWERTY keyboard. Depending on which phone you look at most of the features from the X series are included. However, the P series can provide a business card scanner as well as the possibility to use Skype on the phone. The X series provides a better screen and can access Internet in more ways technology wise.¹³⁸

Regarding the low-end segment, Sony Ericsson's two pure low-end series are the J series and the R series. The J series are very basic phones without fancy features such as a camera, and the R series are basic phones but with the addition of an AM/FM radio.¹³⁹ Examples of phones from these series are the J100i, J210i and R306.¹⁴⁰

4.6.3 Symbian and Microsoft Windows Mobile

Symbian is a software platform for mobile phones and is owned jointly by Ericsson, Nokia, Panasonic, Samsung, Siemens and Sony Ericsson.¹⁴¹ The platform was created in order to provide an alternative to Microsoft Mobile,¹⁴² and the first Symbian platform was launched in 2000.¹⁴³ Sony Ericsson uses the Symbian software platform for a majority of their mobile phones.¹⁴⁴ Microsoft Mobile is Microsoft's software platform for mobile phones. The latest version is called Microsoft Mobile 6. This is also the version that Sony Ericsson is using in their Xperia series. The reason for cooperating with Microsoft is said to be that Sony Ericsson wants to gain market shares in North America. By using Microsoft Mobile 6 it will be easier for the end-consumers to integrate their mobile phone with their existing computer network. However, the Walkman and the Cyber-shot series are still based on the previously used Symbian operating system.¹⁴⁵ Both Symbian and Microsoft Mobile are proprietary software platforms, which mean that they have to be licensed to be used.¹⁴⁶ Symbian states that it is an open platform, well accessible to third part application creators¹⁴⁷, but other sources state that Symbian is in fact a proprietary platform.¹⁴⁸ Symbian is, according to independent software

¹³⁸ Sony Ericsson: Mobiltelefoner (2008-05-31)

¹³⁹ Unofficial Sony Ericsson Blog – Sony Ericsson (2008-05-31)

¹⁴⁰ Sony Ericsson: Mobiltelefoner - Visa telefoner (2008-05-31)

¹⁴¹ Symbian.com: *About: Overview: Ownership* (2008-05-04)

¹⁴² Björn Alsén (2008-05-05)

¹⁴³ Symbian: History (2008-05-07)

¹⁴⁴ Björn Alsén (2008-05-05)

¹⁴⁵ Augustsson (2008-02-11)

¹⁴⁶ BBC News: Technology – *Q&A: Google's Android* (2007)

¹⁴⁷ Symbian: About Us (2008-05-06)

¹⁴⁸ BBC News: Technology – *Q&A: Google's Android* (2007)

application creators, a terrible platform in terms of the possibilities to create new applications to it. Basically, it is almost impossible to create anything of quality, and it is almost impossible to distribute in a significant quantity if something is created, making it function as a proprietary platform in practice,¹⁴⁹ and it is viewed as such in the industry.¹⁵⁰ Once a Symbian-powered phone is bought, the owner will, more or less, have to stick with the original applications for the rest of the lifetime of the phone. About 99 per cent of the applications provided for a Symbian-powered Sony Ericsson phone are created by Sony Ericsson engineers.¹⁵¹

Microsoft Mobile has so far not been able to capture any significant market share on the overall mobile phone market.¹⁵² Sony Ericsson, and mobile phone producers in general, have so far been doing their utmost to keep the software platforms they use in their phones as inaccessible as possible to independent software application creators in order to stay in control of the phones and not let the customer customize the phone too much to their own needs.¹⁵³ However, the advantage for Sony Ericsson to use Symbian is that it is a complete, well-tried software platform, used in large volumes on the market. Extensive investments have been made in order to adapt the platform to network operators and different markets.¹⁵⁴

4.6.4 Position in the market

Sony Ericsson is now the fourth largest actor in the mobile phone manufacturing market. In the longer-term the company aims at a position as a top three player in the mobile phone market. But, to capture a larger market share, most analysts agree, Sony Ericsson needs to get into the lower end of the phone market by producing less sophisticated phones for the Asian market to be sold for EUR 100 – 200.¹⁵⁵ Currently, Western Europe accounts for about 42% of Sony Ericsson's sales. The decision to keep large parts of development and production of high-end phones in-house is contrasted by the new plans to outsource production of the new low-end phones, as announced by the company in spring 2007. Sony Ericsson has reached an outsourcing agreement with Sagem, a French specialist in low-end GSM phones, for the new

¹⁴⁹ Björn Alsén (2008-05-05)

¹⁵⁰ Henrik Glimstedt (2008-03-26)

¹⁵¹ Björn Alsén (2008-05-05)

¹⁵² *Ibid*

¹⁵³ *Ibid*

¹⁵⁴ Sten Minör (2008-04-15)

¹⁵⁵ Henrik Glimstedt (2008-03-26)

line of low-cost phones.¹⁵⁶ Even if Sony Ericsson could have built a low-cost phone based on one of the existing platforms, that alternative would have been too costly, due to for example large memories specified in the platforms for up-market phones. Instead, Sony Ericsson has opted for a combination of hardware and software platforms from Texas Instruments and Sagem to be combined with a compressed version of Sony Ericsson's own software applications. The decision to try to gain market shares by entering the fiercely contested Asian low-end market through the introduction of low-cost phones has been followed by steps towards outsourcing. Sony Ericsson has recently announced that it is establishing a research and development unit for mobile phones in Chennai, India. The move follows closely on the company's January announcement of sourcing local manufacturing of phones in the same area.¹⁵⁷

4.6.5 The evolving product strategy

When Sony Ericsson inserted a digital camera into a mobile phone in 2002, it was an early indicator of Sony Ericsson's new product strategy.¹⁵⁸ Regarding top-of-the-line products, Sony Ericsson's aim is to be market leader with their Walkman (music) and Cyber-shot (cameras) series.¹⁵⁹ Experience now suggests that end-customers are willing to pay for premium phones to the extent that they provide standalone value-adding functions. The mobile phone business is increasingly built more on values borrowed from adjacent markets. Sony Ericsson started competing with other types of technological equipment makers such as the manufacturers of cameras, MP3-players, GPS navigators, digital personal organizers, and all the other digital equipment carried around by consumers. The implications of this would be that the customer value is driven by the integration of digital goods.

Product strategy at Sony Ericsson has been closely tied to the development of technology strategy, placing the development of phones on a modular platform strategy. Modularity has allowed pre-set development activities, building on yearly introduction of a 'mother phone', which is built on a new platform. From this platform, Sony Ericsson then creates a number of 'daughter phones' over the next few years. Sony Ericsson manages the product development

¹⁵⁶ Augustsson (2008-01-17)

¹⁵⁷ Henrik Glimstedt (2008-03-26)

¹⁵⁸ In the T68i, one of the first products launched by Sony Ericsson

¹⁵⁹ Sten Minör (2008-04-15)

in house while they outsource technology development to the company Ericsson Mobile Platform (EMP).

Application software has also been built in this modular way. In that way the applications supports less costly and less time consuming adaptation of the phones to different national or regional markets. There is a fundamental strategic trade-off to be considered in the design of each platform. On the one hand, if the platform is supposed to support all sorts of feasible communication protocols and multimedia functions it will make the platform very expensive. If the cost of the platform goes up, it will do so at the expense of the number of daughter phones that the phone manufacturer develops. The flexibility of a platform can also crowd out product development, reducing the platform yield. On the other hand, if a cost optimizing solution is chosen for the mother product it will not be top of the line. A low cost platform gives only limited flexibility to integrate lately developing trends in the phone fashion. To deal with the strategic trade-off Sony Ericsson for example works closely with EMP regarding multimedia requirements of new platforms.

4.6.6 Standardization

Through the support of open standards¹⁶⁰, Sony Ericsson tries to create an open competitive market in which entrants can sell their branded application products on the basis of maintained interoperability. The aim is to create a dynamic that works the same way as package PC software. Standardization decreases the risk of becoming dependent on a limited number of suppliers. EMP develops and sells mobile phone platforms also to Sony Ericsson's competitors outside the 'Ericsson family'. The platform product includes a package consisting of complete component specifications, printed circuit board layout, printed board software, software, and a software development kit for product development. All these issues are decided on a three-year horizon, which makes it critical for Sony Ericsson to influence the platform design at an early stage. Thus, platform optimization decisions force Sony Ericsson to balance between what functions are delivered by the platform and how many daughter phones Sony Ericsson will be able to develop from the platform. It is important to influence the platform definition process in such a way that the platform actually supports precisely the multimedia functions that Sony Ericsson's product strategists are focusing on.

¹⁶⁰ Not to be mixed up with the concept of open source, which will be defined later in the empirics section.

There are similar trade-off problems in other areas of software development, such as operating system development and the development of user-interfaces. In the case of Symbian, the problem has been that the optimization of the operating system is not neutral to the development of user-interfaces. One way of optimizing the OS may facilitate functions planned to be developed in Nokia's phones, while it might make functions planned by Sony Ericsson slower and perhaps even more complex and costly to develop.¹⁶¹

4.7 Google

4.7.1 Google at a glance

Google Inc. (Google) was founded by Sergey Brin and Larry Page in 1998, as they took a leave of absence from their Ph.D. studies in computer science at Stanford University.¹⁶²

Google defines its main business as follows:

*"Google operates websites at many international domains, with the most trafficked being Google.com. Google is widely recognized as the world's best search engine because it is fast, accurate and easy to use. The company also serves corporate clients, including advertisers, content publishers and site managers with cost-effective advertising and a wide range of revenue-generating search services. Through technology development and a continuing focus on innovation, we work every day on our core mission: to organize the world's information and make it universally accessible and useful."*¹⁶³

4.7.2 The start, the IPO, and some numbers

Brin and Page started working on the idea of a search engine in 1996 because they were not satisfied with AltaVista and the other major search engines.¹⁶⁴ They wanted to develop a search engine that "understands exactly what you mean and gives you back exactly what you want."¹⁶⁵ Google's official motto, or code of conduct is "Don't be evil".¹⁶⁶ Later the same year, the company moved in to their present headquarters in Mountain View, California, called the "Googleplex".¹⁶⁷ In 2001, Eric Schmidt was appointed CEO¹⁶⁸ and in 2004, Google

¹⁶¹Henrik Glimstedt (2008-04-15)

¹⁶²Vise (2005): 58

¹⁶³Google Corporate Information: Overview (2008-03-02)

¹⁶⁴Vise (2005): 36-37

¹⁶⁵Google Corporate Information: Technology (2008-02-28)

¹⁶⁶Google Corporate Information: Investor Relations (2008-03-02)

¹⁶⁷Google Corporate Information: Google Milestones (2008-03-02)

went public on NASDAQ.¹⁶⁹ Google pursued their IPO with a stock price of USD 85 and after one day of trading the total market value of the company was USD 23.1 billion.¹⁷⁰ As of February 29, 2008, the Google stock traded at USD 472.76¹⁷¹, giving the company a total market value of USD 111.5 billion¹⁷², and in 2007, Google's net income was USD 4.2 billion¹⁷³.

4.6.3 What makes Google special?

There are two major features in the structure of Google's search engine, Google.com. First, there is the computer software that creates the search engine and second, there is the hardware, which is made up of hundreds of thousands of custom built computers that are placed all around the world, creating enormous storing and computing power, which together becomes one of the world's largest computing systems.¹⁷⁴ The network of computers basically downloads and indexes the entire web.¹⁷⁵ Its geographical decentralization ensures that a fire or any other kind of damage that may occur in one or several of its locations does not harm the speed of, or the information kept on the network.¹⁷⁶ The computer software is based on something called the "PageRank Technology". This software makes it possible for the engine to rank the different pages in degree of importance.¹⁷⁷ It ranks pages, among other things, based on how many times the word(s) entered in the search fields appear on the page, how many links from other websites there are that directs to this page and how "important" the websites are that link to the page.¹⁷⁸

4.7.4 How does Google make money?

Google's main source of revenues is the small, targeted, text ads on the right hand of the search results that show up on the Google search page after a query. The system is called AdWords¹⁷⁹ and the ad-space is auctioned out to anyone who desires to advertise on the

¹⁶⁸ Vise (2005): 109

¹⁶⁹ Google Corporate Information: Google Milestones (2008-03-02)

¹⁷⁰ Vise (2005): 190

¹⁷¹ Google Corporate Information: Investor relations – finance (2008-02-29, 2.00 pm NY time)

¹⁷² NASDAQ on Google (2008-02-29)

¹⁷³ Google Corporate Information: Investor relations – financial data (2008-02-29)

¹⁷⁴ Baseline – *How Google works* (2006)

¹⁷⁵ Battelle (2006): 79

¹⁷⁶ Vise, (2005): 80-81

¹⁷⁷ Google Corporate Information: Technology Overview (2008-02-29)

¹⁷⁸ Google Corporate Information: Technology (2008-02-28)

¹⁷⁹ Google AdWords (2008-03-02)

Google page (excluding such companies as arms-dealers, and heavy liquor producers among others)¹⁸⁰, and every time someone clicks on one of the ads, Google receives a certain amount of money, usually somewhere in the range of USD 0.3 to USD 3¹⁸¹. Thanks to the fact that hundreds of millions of Internet users click these ads, these small amounts in the end become the major part of Google's revenues (USD 16.6 billion in 2007¹⁸²). The ads that show up on the Google search page are related to the information entered in the query, making it adapted to what the person searching is currently focusing on and the advertisers select what keywords that shall connect to their ad.¹⁸³ Thereby it becomes more efficient and less disturbing to the person searching, when compared to random pop-up ads. A similar system called AdSense displays the same kind of targeted text ads on websites other than Google's.¹⁸⁴ One of the main competitive financial advantages for Google is that the company managed to find a smart way on how to make money out of ads with a system that works both for business and computer users.¹⁸⁵

Google has launched several software services in addition to the search engine. Arguably the most well known is Gmail, a free e-mail service.¹⁸⁶ Gmail contributes to Google's revenues through message-adapted text ads that show up to the right of the e-mail being read. The two major other services that Google freely provide are Google Maps and Google News. Google Maps lets the users view maps of most of the inhabited parts of the world and look at road directions, and Google News displays the latest news from and lets the user browse among the latest publicized articles from ca 4,500 newspapers around the world. It's also possible for the user to get an e-mail notice every time one of the 4,500 newspapers publicizes a story relating to a certain area or key-word.¹⁸⁷ In late 2006, Google bought the video-sharing website YouTube, seriously moving into the realm of web 2.0.¹⁸⁸

¹⁸⁰ Vise (2005): 166-167

¹⁸¹ Vise (2005): 115

¹⁸² Google Corporate Information: Investor relations – financial data (2008-02-29)

¹⁸³ Google Corporate Information: Business Overview (2008-03-02)

¹⁸⁴ Google Advertising Programs (2008-03-02)

¹⁸⁵ Vise (2005): 118

¹⁸⁶ Gmail : Google's approach to e-mail (2008-02-29)

¹⁸⁷ Vise (2005): 295-296

¹⁸⁸ BBC News- *Google buys YouTube for \$ 1.65 bn* (2006)

4.7.5 Googling on your mobile phone

Recently, an increasing part of Google's advertising revenues has come from users of mobile Internet, for example people conducting Google-searches through their mobile phones.

"Google has never separated out its mobile revenues but Mr Gundotra [head of Google's mobile operations] said the business was growing "above expectations", both in terms of usage and revenues"¹⁸⁹. " If the trend continues and other mobile phone manufacturers follow Apple's lead in making web access easy, the number of mobile searches will overtake fixed Internet searches within the next several years, Mr Gundotra said"¹⁹⁰. A threat to the increase in use of Google's services through mobile phones has been the fact that by using proprietary software platforms, companies such as AT&T Inc. and Verizon control what software their customers can have on their mobile phones.¹⁹¹ If Google is excluded from the mobile market it runs the risk of missing out on potential revenues. When consumers start to use phones with Internet connection they will most likely conduct more searches on their mobile phone.¹⁹²

4.7.6 Android

In order to deal with this issue, Google launched an open source¹⁹³ based software platform for mobile phones, called Android, in November 2007¹⁹⁴, after having bought a company with the same name in 2005¹⁹⁵. Andy Rubin, Director of Mobile Platforms at Google, writes:

*"Android is the first truly open and comprehensive platform for mobile devices. It includes an operating system, user-interface and applications -- all of the software to run a mobile phone, but without the proprietary obstacles that have hindered mobile innovation. We have developed Android in cooperation with the Open Handset Alliance, which consists of more than 30 technology and mobile leaders including Motorola, Qualcomm, HTC and T-Mobile. Through deep partnerships with carriers, device manufacturers, developers, and others, we hope to enable an open ecosystem for the mobile world by creating a standard, open mobile software platform. We think the result will ultimately be a better and faster pace for innovation that will give mobile customers unforeseen applications and capabilities."*¹⁹⁶

¹⁸⁹ Financial Times - *Google homes in on revenues from phones* (2008)

¹⁹⁰ *Ibid*

¹⁹¹ MarketWatch - *Google unveils mobile-phone strategy* (2007)

¹⁹² *Ibid*

¹⁹³ Open source will be explained in the following section

¹⁹⁴ MarketWatch - *Google unveils mobile-phone strategy* (2007)

¹⁹⁵ The Economist. Business: *From iPhone to gPhone?* (2007)

¹⁹⁶ Official Google Blog (cached version) – *Where's my Gphone?* (2007)

Rubin continues: *“It's important to recognize that the Open Handset Alliance and Android have the potential to be major changes from the status quo -- one which will take patience and much investment by the various players before you'll see the first benefits. But we feel the potential gains for mobile customers around the world are worth the effort.”*

Android is open to anyone who wants to create applications to the Android platform and the software needed for the creation of applications that will run on Android can be downloaded for free.¹⁹⁷ One of the most significant differences between Android and other, proprietary platforms is Android's having the possibility of faster development of applications and services. The Linux-based platform will be opened to any developer for any application. Currently, the majority of smart phones run on several different operating systems, most of which are based on proprietary technology.¹⁹⁸ Android is different from proprietary platforms due to its openness and what it can mean for innovating applications and for the development community. A major problem for proprietary platforms is the slow development of new applications.¹⁹⁹ The fact that the platform is based on Linux will further spur computer programmers to develop applications for Android. It will bring applications faster to the consumers than other operating systems are able to.²⁰⁰

Cole Brodman, T-Mobile USA's chief development officer, says “the ability to use Internet applications and services on a mobile device in an unfiltered way could change the way the Internet is used.”²⁰¹ In addition, the most successful operating systems are those with the greatest amount of applications and devices.²⁰² T-Mobile also says that “all of its offerings will be tailored to the consumer, and the consumer, in turn, will tell the carriers what they expect their mobile devices to be able to do [when using the Android platform]”.²⁰³ Different developers, not being members of the Open Handset Alliance, are already releasing applications that will fit to Android. One example is the Opera Mini 4 browser. Opera Mini 4 is a fast, lightweight browser and is optimized for quicker scrolling, navigation, and page

¹⁹⁷ Android - An Open Handset Alliance Project – Download Android SDK (2008-04-24) (the software can be downloaded at <http://code.google.com/android/download.html>)

¹⁹⁸ Smith (2008-04-01)

¹⁹⁹ Smith (2008-04-01), Wireless News (2008-04-07)

²⁰⁰ Smith (2008-04-01)

²⁰¹ Smith (2008-04-01)

²⁰² Mallinson (2008-04-03)

²⁰³ Hay (2008-04-23)

rendering on mobile phones.²⁰⁴ Opera Mini for Android makes the company's fast-performing and device-adapting Web experience available to any range of mobile phones built on Android.²⁰⁵ Android will most likely provide a better bundle of applications than any other platform previously released and Google wants Android to do for mobile phones what Windows did for computers. When Windows came PCs set their standards around that OS.²⁰⁶

Regarding the technical innovations of Android, the Open Handset Alliance members have promised to optimize their latest technical capabilities for mobile phones running the platform. Even though the Android phones will be open, they still will be certified at several levels, including an Open Handset Alliance process and the standard carrier certification.²⁰⁷ The general opinion is that in putting together the different technological parts provided by the Open Handset Alliance members and (and others) on a platform, something innovative will be created. Connecting these different pieces in a new way is something that proprietary platforms fail to do.²⁰⁸ More importantly, future Android-based phones will have the possibility of being customized to each consumer. He or she can by themselves put together the different applications of their choice, creating a completely new phone set up.²⁰⁹ When thinking about what Android would look like once installed in mobile phones on the market, it is likely that Google searches, e-mail and advertising technology would be closely integrated.²¹⁰ Android-based phones (not necessarily produced by Google) are said to hit the stores in the second half on 2008.²¹¹

4.7.7 The first sign of a Gphone?

Recently, a prototype mobile phone was released, based on Google's Android operating system. The phone was not manufactured by Google, but has been nicknamed the "Gphone" by the press.²¹² Supposedly, it is very fast and efficient.²¹³ This has further increased the intensity of the discussion on whether Google is going to launch a mobile phone under the

²⁰⁴ CMP TechWeb (2008-03-26)

²⁰⁵ M2 Presswire (2008-04-10)

²⁰⁶ Seabrook (2008-03-22)

²⁰⁷ Smith (2008-04-01)

²⁰⁸ CMP TechWeb (2008-03-26)

²⁰⁹ BBC News: Technology- Q&A: Google's Android (2008-05-02)

²¹⁰ The Economist. Business: *From iPhone to Gphone?* (2007)

²¹¹ Official Google Blog (cached version) – *Where's my Gphone?* (2007)

²¹² Times Online - Video review: *Google-powered phone* (2008)

²¹³ *Ibid*

Google brand or not. Many believe that a real Gphone is not far away and that it will include several Google applications, such as its search engine, Google Maps, YouTube and Gmail.²¹⁴ However, as for today it remains unclear whether the company will actually start producing mobile phones under its own brand. Google's CEO, Eric Schmidt, has only stated that Android would be a good platform for a phone to run on.²¹⁵

4.8 Definition of open source

According to Steven Weber open source can be defined as the following: "[The] source code must be distributed with the software or otherwise made available for no more than the cost of distribution. Anyone may redistribute the software for free, without royalties or licensing fees to the author. Anyone may modify the software or derive other software from it, and then distribute the modified software under the same terms."²¹⁶

The reason for open source being extraordinary is the fact that it is dependent on computer code. This code is something that people often find more practical, reliable, and it can more rapidly be evolved than the majority of proprietary software created inside an ordinary corporation.²¹⁷ The importance of open source based platforms will increase²¹⁸, however, it is important to remember that the process of open source software is not a process where everyone has equal influence or power. Neither is it something perfect where likeminded reaches agreements in consensus, creating something idyllic.²¹⁹

²¹⁴ The Wall Street Journal Online - *Can Google-Powered Phones Connect With Carriers?* (2007)

²¹⁵ Times Online - Video review: *Google-powered phone* (2008)

²¹⁶ Weber (2007): 5

²¹⁷ Weber (2007): 3

²¹⁸ Sten Minör (2008-04-15)

²¹⁹ Weber (2007): 3

5. Analysis

The purpose of this section is to apply the theoretical framework to the empirical data, resulting in an analysis of how Google's assumed entry into the mobile phone market and the process of the Internet industry and the mobile telecom industry merging will affect Sony Ericsson.

Despite a constant evolution in the technology of mobile phones and mobile network systems, the basic business model has remained constant through the history of the mobile phone. Network operators have charged customers for using radio frequencies and mobile phone producers have charged customers for mobile phones. However, the entry of Google into the mobile telecom industry and more specifically into the mobile phone market will result in a major change. As mentioned in the first part of the thesis, the suggestion is that it takes both a shift in technology and a shift in the business model to revolutionize the mobile telecom industry in general, and the mobile phone market in particular. So far no real change or shift has occurred regarding the basic business model. Indeed, new services such as SMS and Internet connection, as well as including a music player in the mobile phone and letting customers download new songs has been introduced along the life of the mobile phone, but the cornerstone of the business was and is still that customers pay mobile phone producers for a mobile phone (and mobile network operators for the possibility to use a radio frequency with their mobile phone).

In launching the Gphone, Google will manage to cause a shift in both technology and business model. Android is a shift in technology, to a new, quicker, open source based platform and the idea of bringing Google's Internet business model of making money on advertising into the mobile telecom industry is a shift from the traditional business model of the mobile phone producers. Consequently, a Gphone launch by Google must be considered to be a threat to traditional mobile phone producers such as Sony Ericsson. The Google entry will most certainly affect other parts of the mobile telecom industry, but, as defined in the delimitations section, the focus in this thesis is kept on the mobile phone producers, using Sony Ericsson as the example.

However, the technology used by Sony Ericsson is getting closer to its physical limit, meaning that soon the costs will increase in relation to what it produces in terms of

innovation. Therefore, Android also presents a possibility for Sony Ericsson to shift to a technology with a higher performance rate. Android will probably be the beginning of the end of the established platforms that are mainly used today. However, it is important to highlight the creative side of this destruction, seeing the change as a possibility to build on something new. The above implications are the more general ones. On the following pages a deeper analysis will be conducted.

5.2 Creative destruction

5.2.1 The knowledge base

Sony Ericsson is using proprietary platforms for their mobile phones. The open source platform Android will give users the possibility of altering applications of their own choice to their Gphones - independent programmers can by themselves create these applications. In the proprietary platforms this is not possible and causes a situation where Sony Ericsson and other manufacturers has most of the knowledge, or at least owns a lot of the knowledge. Now, knowledge about the Internet and computers will slowly be adaptable to phones and the knowledgebase will be broadened and changed. The handset manufacturers will not be able to keep their knowledge “closed” and therefore they will lose some of their control over their products and the market. New entrants may take advantage of this loss of control, and benefit from the new open source and compatibility with Internet. Open source brings forward the buyer and places her needs more in the centre. Knowledge and ideas, new product concepts etc. are very important. The main strength of the Gphone will be its Android open source software platform. With regards to theory, this is more valuable than proprietary platforms that are used by Sony Ericsson, in the long run. The reason is the fact that anyone can and is allowed create applications to this platform. Because of this, programmers can quickly bring regular Internet applications to the Gphone. In particular, programmers can quickly and easily create Gphone versions of web 2.0 software like Youtube, MySpace, Facebook, and Wikipedia. This will be the competitive advantage of the Gphone – that it will be the mobile phone for which customers will always be able to find the latest Internet applications.

This technology shift would, according to Schumpeter, be enough to create a situation of change in an industry, where new players enter the market and old ones are forced out. But as history has shown, the mobile phone market has remained fairly stable despite several technological shifts. The key difference in the situation analyzed in this thesis is that Google

also brings a new business model into the market. Google's business model of making money on online advertising is not new per se, but transferring it into the mobile phone market is revolutionary. Google's main source of revenues from the mobile phone project will not be from selling phones, but from increased mobile Internet usage and thereby increased clicking on Google's online ads on Google.com and Gmail, for example. The merging of the Internet industry and the mobile telecom industry began already when mobile phone users could start sending e-mails on their phones and increased substantially when mobile phone users could start visiting certain adapted web pages on their phones. The introduction of Google's online advertising business model on the mobile phone market constitutes a remarkable step forward in this merging process, and this step will be the shift in business model that, according to the authors' suggestion, will make Schumpeter's theory of creative destruction applicable to the mobile phone market.

5.2.2 Entry on the market

It will be easier for new players to enter the telecom market when open source is prevalent. Android implies that any one that can write code can now be a part of this market. In under-developed parts of the world where the mobile phone may become the first contact with the Internet for large parts of the population, it would seem natural for computer manufacturers like Dell or HP, for example, to get into the mobile phone market. In addition, the sub-markets for mobile Internet application producers could be expected to grow. It is still a question of obtaining the critical mass in order to sell phones, but due to the fact that entry to the market will be facilitated, due to less proprietary standards, the general conditions on the market will be altered. The telecom market will grow in size, foremost in terms of number of companies, but also in terms of users.

5.2.3 The S-curve

Sony Ericsson is approaching the upper part of the s-curve of the technology that older, proprietary mobile phone platforms constitute, where increase in performance becomes more and more expensive. Sony Ericsson is now faced with the difficult decision of productivity versus efficiency. By now, the company has learnt to master the technique of building a well functioning mobile phone. If they were to shift towards the newer technology of open source there would not only be a loss of high productivity but also a loss of some of the control that a proprietary platform contains. The pace of introduction of new applications to Sony

Ericsson's mobile phones will not be able to keep up with the pace of application development for the Gphone. It will take a while to master the new technology and reach the same level of productivity. The biggest challenge is therefore to determine when to successfully shift to the new technology. However, miscalculations may lead to failure for Sony Ericsson and give attackers or entrants to the market an advantage. In addition, Sony Ericsson face the problem that if they do shift to open source they will cannibalize on their existing platforms and products. This causes the dilemma of whether they should keep investing in the old platforms and when to shift to the new.

As mentioned in the theoretical framework, one of the biggest challenges when applying the s-curve is to identify where the company is on the curve. Android represents a new curve compared to the platform technology used presently in the industry. Sony Ericsson is probably in the upper part of the curve, as the present technology was developed almost ten years ago. In addition, Android has been developed quite a bit today and companies and private programmers have already started to develop software for Android. It is more likely that Sony Ericsson is getting closer to the upper flat part, as the general opinion in the industry is that it takes too long a time to develop applications for Symbian.

It is also important not to forget other factors than technological efficiency that might delay a shift to a new curve. There are indeed several social and economical reasons for not shifting. This is where theory simplifies the situation quite much. For example, Sony Ericsson has invested large amounts of money into Symbian and is consequently reluctant to give up that technology. In addition, Sony Ericsson may lack enough personnel that possess the necessary knowledge to start using open source and many different contracts with suppliers obviously exist.

As the market is changing, it is important to keep innovating to maintain corporate growth. Considering the idea of Sony Ericsson moving towards an open source platform, there is also the question of whether the company should try to join the Open Handset Alliance and Android, or imitate it, creating their own platform. This issue brings the reader to the next part- network externalities. It's vital to make sure to be in the network in a network economy.

5.3 Network externalities

In a network economy it is, as previously stated, very important to have a critical mass and that consumer expectations are positive. This could be translated into that it is good if consumers think that the company will grow, as this will increase the value of their product. This can be seen in the fact that Sony Ericsson published their forecasts about how many phones they think they will sell. In addition the company has clearly stated their intent of becoming number three in the mobile phone market. This puts Google's Gphone in an interesting position. Initially, in one aspect, Google will potentially experience difficulties in winning the critical mass for their Gphone, since consumers are aware of their network being small in the traditional sense (no previous mobile phones from Google to build on). However, taking into account the network that the Gphone will have through the adaptation to Internet applications and use in general and Google's own Internet services, such as Google.com, YouTube and Gmail, in particular, Google and their Gphone suddenly appear to have an extensive network. This network will be a threat to the existing position of Sony Ericsson, since Sony Ericsson's network of services and applications is not as well adapted to the trends of the Internet.

5.3.3 Standards

Sony Ericsson has to be concerned about standards in technology for mainly two reasons: consumer expectations and how Sony Ericsson's mobile phone technology works with other technologies in the telecom market. This may become the battle of standards. Gphone will have the possibility to draw upon Google's already existing standards - how Google and its different Internet services work with a Gphone. This is something that Sony Ericsson will struggle with more. They do not have the existing knowledge about Internet in the way that Google has. Since Google's Android platform will be well adapted to let developers capture the fast-moving trends of Internet applications, standards used by Sony Ericsson will probably find it harder to attract supporters and developers. Even though the concept of open source already exists in the IT world, it is new to the handset market and will probably become a leading standard.

5.4 Two versions of the Gphone

Sony Ericsson has mainly been focusing on manufacturing for the high-end, smart phone segment of mobile phones, but has plans on starting to develop their focus on the low-end

segment as well. Therefore, an analysis is conducted on the possibility that a potential Gphone will be launched in these two segments. In addition, these two are the most likely versions of the Gphone as it is in these segments where the profitability lies. With a low-end phone it is possible to obtain large volumes while a more exclusive phone has higher profit margins. Most likely, the “fancier” smart phone would be similar to the likes of Apple’s iPhone and the assumed client is trendy, with money to spend. The phone would, obviously be focused around providing smooth Internet access and instant access to the various Google services, but it would also include “fancy” phone features such as a digital camera, mp3-player, movie-player etc. This version of the Gphone will compete with Sony Ericsson in the high-end market segment, mainly in developed markets. Examples of rival products would be top-of-the-line products like Sony Ericsson’s Xperia and Apple’s iPhone. Besides encouraging Internet use (and thereby clicking on Google ads and generating revenue for Google), the high-end Gphone can be sold at a high price, but still lower than prices of competing products in the segment thanks to Google’s business model. This will bring revenues to Google both through the traditional online advertising channel and through the new mobile phone sales.

Secondly, the other version of the Gphone would be a basic version aimed at the low-end segment and especially emerging markets. The sole purpose of this phone, from Google’s point of view, would be to encourage people to use the Internet and web 2.0 and thereby increase Google’s revenues. The phone would not include a lot of additional features. The important idea here is that Google would be able to sell this phone for a negligible price, since the revenues will come from online Google ads that the customers will access through the phone. The low-end Gphone would potentially be able to create a segment of its own, since it could be expected to come at a significantly lower price than other low-end mobile phones, but it will initially compete with low-end products like the phones Sony Ericsson will launch in cooperation with Sagem.

The idea that Google would be able to make profits on increased Internet usage, and thereby increased online advertising and ad-clicking in developing parts of the world, could obviously be discussed. Will people under poor economic conditions really be able to afford to advertise online if they can hardly afford a mobile phone? The authors of this thesis believe so, and the reason is the design of Google’s AdWords, which allows business of all sizes to reach clients of all imaginable types, thanks to the fact that the ad-space is auctioned out and adapts to what

the searcher is looking for. For example, a poor farmer in India, focusing on poor villagers Googling for wheat in the region will only compete with other poor farmers in the region trying to sell their wheat. The amount of money Google will earn from each click by the poor villagers looking for food is insignificant, but as the mobile Internet usage increases in the area, so will the revenues for Google, and the potential is enormous.

5.5 SWOT²²⁰ analysis

5.5.1 High-end segment

The main strengths of Sony Ericsson's high-end segment phones are that they provide top of the line technology and features. The phones offer advanced technology with easy Internet access- everything that business people would need in a phone. In addition, the design of the phones, as well as the Sony Ericsson brand are important strengths. The phones are now built on either the Symbian or the Microsoft Mobile platform. This provides better opportunities to adapt to the environment where the Sony Ericsson phones are sold. Another strength is the fact that one of the recent high-end phones is a so-called Skype phone. This basically means that Sony Ericsson is extending its network externalities and profiting of the positive effects of using Skype.

One of its weaknesses is that the phones are expensive. Consumers with less money cannot buy these phones. This means that the large sales volumes are never obtained. One could also argue that the phones are unnecessarily advanced in terms of technology. Is the increase in product development costs for including a business card scanner in the phone really defensible? Whether the answer to that question is "yes" or "no" the cost for developing the high-end phones is very high. Another major weakness is that the phones cannot be modified very easily. Each platform can only be used in a number of ways.

By using Microsoft Mobile it is possible to gain market shares in North America. Skype also plays an important role here. By including technology so Skype can be used in the phones the opportunity of attracting a different kind of customers appears. Another opportunity would be if Sony Ericsson found a way to easily adapt the phones to current internet features faster than is possible today. The attractiveness of the phones would increase. If Sony Ericsson was to

²²⁰ Strengths, Weaknesses, Opportunities, Threats

expand into the developing parts of the world, they can profit from their knowledge in how to adapt Internet to phones. Even if poor people do not need the advanced technology they can take advantage of the possibility to access Internet through the phones. If Sony Ericsson could develop cheap phones with Internet access it would increase its chances for gaining market shares in developing parts of the world.

A threat for Sony Ericsson is cheaper phones that provide the same features in both soft and hardware. One can also argue that a weaker world economy at the moment imposes a threat. The phone market is expected to stagnate in the Western world, meaning that it will be increasingly difficult to increase sales figures in that market. In order to do so the company has to steal market shares from other competitors. It is in the developing parts of the world where mobile phone manufacturers have the possibility to gain shares in a completely new market. However, poor people will not afford the high-end phones and the demand for the advanced technology in the phones will probably not be large.

A high-end Gphone will pose a significant threat to Sony Ericsson's high-end phones. Mainly in three ways: (1) The technology provided in a Gphone would most likely be top of the line technology as each of the members in the Android consortium will put their latest products in the Gphone. This means that Sony Ericsson will have another competitor that can steal their market share. (2) The Gphone is assumed to be launched via Google, using their business model. This means that they can probably sell their high-end phones, with easy Internet access, to a lower price than Sony Ericsson. The more people that use their phones- the more money Google can make on ad clicking. (3) Android is a better platform for fast developments of applications, in comparison to Symbian and Microsoft Mobiles.

5.5.2 Low-end segment

Regarding the strengths, the phones are simple, which brings low costs. In addition, Sony Ericsson's well known brand (especially in the high-end segment) should be an advantage when interacting with customers. Regarding weaknesses, Sony Ericsson has so far been focused on higher-end phones, which means that low-end customers might not have direct previous experience from Sony Ericsson phones, although they probably know about the brand. Another weakness, especially compared to Nokia, is that Sony Ericsson does not have the same volume in its production of phones in general and low-end phones in particular. This

results in Sony Ericsson not being able to benefit from economies of scale to the same extent as Nokia.

An opportunity is that Sony Ericsson should be able to leverage its brand recognition from the high-end segment when focusing increasingly on the low-end segment. As one of the market leaders in the high-end segment, Sony Ericsson should be able to transfer their image to the low-end segment. Another opportunity can be spotted in the newly established agreement with Sagem. Sagem-manufactured Sony Ericsson phones should be able to keep manufacturing costs down thanks to Sagem's experience in the low-end segment. A threat to Sony Ericsson' low-end segment phones is that the margins for low-end phones are very low and therefore economies of scale in this segment should be more important than in the high-end segment. Sony Ericsson has up until now focused much less on the low-end segment than Nokia for example, and therefore Sony Ericsson's production apparatus is less adapted to low-end, low cost production challenges. Another threat is that Sony Ericsson is not going to be able to capture important market shares in the low-end segment fast enough and thereby letting competitors get ahead in this market.

The low-end Gphone will be a threat to Sony Ericsson's low-end segment sales because Sony Ericsson's extensive experience in manufacturing phones will be less of an advantage in this segment since Sony Ericsson's focus has so far mostly been on the high-end segment. Considering that Sony Ericsson does not have a large market share in this segment, they will not have a big advantage in terms of economies of scale compared to the new Gphone. Considering that margins are small in the low-end segment, a Gphone with a price subsidized through Google's business model will be a threat to Sony Ericsson's low-end phones.

In general, a shift in the platform technology, which would be a likely result of a Google and Android entry would mean that a big part of Sony Ericsson's investments in older, proprietary platforms will be dramatically devaluated. This would have a serious effect on Sony Ericsson's equity valuation. In addition, the new technology would make a lot of Sony Ericsson's human resource capabilities and knowledge redundant and outdated. As a result, Sony Ericsson would have to spend a substantial amount of resources on re-educating their personnel or firing a large number and then hire new ones. This would cause major distress

within the company, which would seriously hurt the morale of all employees as well as the corporate culture, resulting in a loss of performance.

5.6 Indirect threats to Sony Ericsson

There is also a more indirect affect on Sony Ericsson. It is possible that the telephone manufacture members in OHA will start producing phones based on Android. However, they will not be launched as a Gphone but rather under each individual mobile manufacturer's brand. This would create a new situation for Sony Ericsson. HTC, LG, Motorola and Samsung are all members of OHA and are struggling to expand and gain market shares around the globe. India and the US are two important markets where Sony Ericsson is trying to gain shares. We will therefore look closer at these market to see how a launch of Android based phones would affect Sony Ericsson in those markets.

HTC is the one that probably has come further than the other OHA mobile phone manufacturers and will therefore probably present its Android based phone first. As it is aiming at the high-end segment it will be a threat to Sony Ericsson due to the fact that the phone will be running on Android. Even though Sony Ericsson is bigger than HTC on the North American market HTC can gain valuable market shares via Android. This goes for Samsung, Motorola an LG as well. Motorola is probably one of the players that can gain the most from Android as it is losing market shares. This would cause a situation where Android will threaten Sony Ericsson as Sony Ericsson will not be able to gain as many market shares from Motorola as it would have done if Motorola did not have Android. However, in the near future Motorola will probably not release that many new products and it will take time for the company to restore its position no matter what products it will launch. Motorola can therefore not be considered a short-term threat to Sony Ericsson's expansion in the US. Of course that may change in the longer term.

Samsung has approximately the same market share as Sony Ericsson in the US. They are also supposedly developing an Android-based phone. Samsung's development of an Android phone is probably more of a threat to Sony Ericsson than HTC's phone as Samsung has a stronger position in the US market than HTC. Samsung and Motorola are both focusing on high-end phones, meaning that if they were to release an Android phone it would probably be in that segment. That is also the segment where Sony Ericsson has its

core competence. The last handset manufacturer that is a member of OHA is LG. LG is present in both the high and low-end segment and will therefore pose a large threat to Sony Ericsson's plans for expansion. Not only in the North American market but also in emerging markets, such as India, where Sony Ericsson plans to gain market shares.

5.7 Why should Google launch a Gphone?

Returning to the assumptions in section 1.4, a brief motivation to why the authors believe that Google is likely to launch a Gphone will now end the analysis section. First, there is an ongoing discussions and rumors in the mobile telecommunications industry and the press regarding a possible launch of a Google-branded mobile phone. Second, providing the negligible-cost phone to people in emerging markets will be a natural step in Google's vision to provide everyone with information about anything, anytime, anywhere in the world and this could very well be considered to be in line with Google's core business idea. The mobile-phone-selling business will initially not bring important direct revenues, but eventually, when emerging markets become increasingly developed, Google will be in a good position to also start making profits directly on its mobile handset business, as customers from these regions start to shift from the low-end version to the high-end version. The launch of a Gphone will not only encourage the use of Internet through the Gphone, but it will inevitably force competitors to move into open-source platforms and Internet-adapted mobile phones, which will further increase Internet use through mobile phones and further increase Google's revenues from its online advertising. In short, both the launch of the Gphone and the responding actions of competitors will increase Google's revenues.

5.8 Alternative arguments

Throughout the process of writing this thesis, the authors have discussed several arguments against a success for Google in launching a Gphone. First of all, Google's area of expertise is Internet software and constructing extensive computer networks. Google does not have any experience from designing or manufacturing mobile electronic equipment. If Apple's iPhone is used as an example, the step to enter the mobile phone market was remarkable. However, Apple had accumulated vital experience in designing and producing mobile electronic equipment thanks to the immensely popular iPod-series. Google lacks this type of knowledge. There are countless examples of companies with a certain type of expertise that have tried to enter a new field and failed. Launching a mobile phone producing apparatus requires

substantial investments and in case the adventure would not succeed, a serious blow to Google's brand could be the consequence. However, Google is a very young company, known for its innovativeness in launching new services. Moving into new types of services and products should be in line with this image. In addition, Google is in possession of enormous resources, which would guarantee the financial aspect of a mobile phone launch. And finally, it is rather unlikely that a not very successful mobile phone launch by Google would diminish the number of users that have Google as their preferred search engine, which is the main source of Google's revenues.

6. Conclusions

This section will present the authors' conclusions on whether Google's assumed entry into the mobile phone market poses a threat to Sony Ericsson and why.

The main take-away from the analysis is that, in launching a Gphone, based on the new Android platform, with the business model of making money mainly on increased clicking on Google's online advertising, instead of making money directly on revenues from mobile phone sales, Google will manage to cause a major shift in both technology and business model on the mobile phone market and thereby, in the words of Schumpeter, bring creative destruction into the mobile handset market. By merging the Internet and mobile telecom industries in a new manner, the launch of a Gphone by Google will indeed be a threat to traditional mobile phone producers such as Sony Ericsson. The Gphone will probably take market shares from Sony Ericsson, both in the high-end segment and in the low-end segment. Mainly, both versions of the Gphone will be a threat, technically speaking, because they will be able to keep up with the Internet trends and Google's online services in a way that the proprietary-platform-based phones of Sony Ericsson cannot. It is also important to remember the indirect threat that Android will pose, via the OHA phone manufacturers. If they start to produce phones based on Android, under their own brand, this will most likely strengthen their position in the market while it would weaken Sony Ericsson's.

In the words of McGee, and Katz and Shapiro's theories on network externalities, the Gphone through its potentially revolutionizing adaptability to the Internet will dramatically enlarge the network of its users, making the product desired by customers. This is the central technological advantage of Google and Android. In addition, Google will be able to keep prices lower than Sony Ericsson (and in the case of a specific low-end Gphone have a negligible price) thanks to Google's business model of making money on online advertising. However, by encouraging Sony Ericsson to switch to open source platforms and further adapting their mobile phones to Internet use, Google's entry could also be an opportunity for Sony Ericsson to be an early follower. The technological innovation that Android puts forward is something that can be seen as unavoidable for the industry, and thereby a possibility for Sony Ericsson to focus on and use in order to gain market shares. Google's entry will clearly threaten Sony Ericsson's market share, and in the long run Sony Ericsson's

survival on the market, but by adapting to Google, Sony Ericsson could gain market shares from the other traditional mobile phone producers.

7. Critique, discussion and further research

This closing section will include a brief discussion of the results and conclusions, as well as criticism to different aspects of the thesis. Finally, the authors will draw the reader's attention to interesting possible further research on specific subjects connected to the thesis.

7.1 Discussion of the result

It is important to highlight the fact that the Gphone should not only be viewed as a threat but also as an opportunity for Sony Ericsson. The company has the possibility to evolve with the possible shift in technology. Nonetheless, it is going to be very interesting to observe the future and see if the changes in the telecom industry will be as large as can be expected. Will the telecom industry and the Internet industry completely merge? And what implications will this have for the future? The theory used in this thesis to explain the dynamics of the mobile telecom market today cannot explain entirely what is observed: the possibility of two high technology markets merging. The s-curve, for example, refers to one *technology* replacing another, but maybe an *industry* is replacing the other, even if that industry is built on the new technology. It is also discussable which of the two industries are approaching whom. Is it Internet companies, such as Google, that have approached the telecom industry or is it telecom companies, such as Sony Ericsson, that have themselves provoked this threat today, seen in the Internet companies by adding the Internet service to their phone? Either way, it is definitely a question of two network industries seeing possibilities in growing their network even bigger and in that way increasing company profits.

7.2 Critique

Some of the delimitations that the authors of this thesis have made may be seen as a cause of an analysis less deep. The most obvious example is the choice to only focus on Sony Ericsson and Google. By only focusing on these two, many important variables that can affect the market may have been neglected. However, it is the opinion of the authors that this was an important delimitation to make. As the thesis follows a format, where the maximum pages

amount to 50, it was felt that the additional empirical data as well as the analysis of such information would be far beyond the scope of this thesis.

Regarding the analysis, the authors are not entirely happy with the connection to the theory on the s-curve. The main problem was to estimate where Sony Ericsson's present platform is found on the s-curve. At the start of the thesis process the plan was to be able to make a good estimation, primarily based on key information provided directly from primary sources at Sony Ericsson. However, throughout the process it became clear that the interaction with Sony Ericsson would not be as close as hoped. The consequence is that the analysis on the s-curve turned out rather brief. When touching upon the issue of sources, another point to highlight is the fact a lot of web sites have been used as sources in the thesis. This might be a bit unfortunate, however necessary. The subject is, as earlier mentioned, very new and information is therefore mainly found online

Another negative aspect of the thesis, related to the preceding paragraph, is the lack of primary information from Google and Sony Ericsson concerning their view of the current situation on the telecom market. Even if this is unfortunate it is understandable. One of the reasons for why this issue is interesting is that it is very up to date and a key strategic issue for the players on the market. However, as it is strategically important it also makes companies very careful about what information they give away.

The authors of this thesis also had a discussion about how specific the text should be regarding technology. Throughout the process of writing the thesis, it became apparent that the technological aspect of the phenomena analyzed was a bit more complicated than first assumed. This might have led to some parts of the empirics being a bit confusing and some parts of the analysis being a bit vague. However, the ambition was to keep the text at a technological minimum in order to increase the overall understanding for the reader. The reader as such is assumed to be a business student, not an engineering student.

7.3 Suggested further research

Regarding further research within this area there are plenty of opportunities. One of the issues would be to write a much more extensive thesis about the strategic issues of the entire telecom

market, not just Sony Ericsson and Google. This would give important input on how different actors affect each other when a threat is prevalent from a player that normally acts outside the market. Do the existing players create alliances against the threat? Do they see the new entrant as a possible ally? In addition, it would be interesting to see a follow up on this thesis three years in the future. What did actually happen? Did Google proceed in launching a mobile phone? Was there a shift in technology and business model? Who were the winners and the losers?

Another interesting aspect to dig into is the possibility of Google altering the telecom market even more. The company has been bidding on radio wave spectrum in the US²²¹, which reveals a possible intention to get into the mobile network operator market as well. Is Google planning to become a “one company show”, that provides all different phone services, everything from being the operator to making the phones and connecting the users to their Internet services? This would make for some interesting further research.

²²¹ The Economist. Business: *From iPhone to Gphone?* (2007)

8. References

The references are presented as follows: first printed source, second, online sources, and finally interviews. The printed sources have been listed after the author's surname and in cases where no author has been identified, after the name of the journal or newspaper. The online sources has been divided into articles, Google Corporate Information, Sony Ericsson Corporate Information, and website information. The online articles have been listed after the journal, newspaper or online magazine that published the article. The online website information has been listed after company or organization. The dates of browsing the websites of online sources are given in parenthesis immediately after the site address.

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Henrik Glimstedt, Associate Professor, Stockholm School of Economics 2008-02-05

Henrik Glimstedt, Associate Professor, Stockholm School of Economics 2008-03-26

Henrik Glimstedt, Associate Professor, Stockholm School of Economics 2008-04-15

Björn Alsén, Partner, Diligo Advisers AB. 2008-05-05

Mr. Björn Alsén has got many years of experience as a management consultant, with Arthur D. Little (ADL) amongst others. At ADL Mr. Alsén led the Scandinavian Telecommunications, Information Technology, Media & Electronics (TIME) practice. Mr. Alsén has also been involved in developing third part software applications compatible with the Symbian platform.

Sten Minör, General Manager, Sony Ericsson Mobile Communications, Sweden.

Phone interview 2008-04-15

Appendix 1 - Word list

1G (first generation) mobile network technology

See “NTM 450 and 900”

2G (second generation) mobile network technology

Also called GSM (see “GSM”). Improved the 1G network system by increasing transmission capacity in the network system. 2G systems gave birth to a system called GPRS (see “GPRS”) which has been labeled a 2,5G mobile system.

3G (third generation) mobile network technology

This latest development of mobile network systems was first commercially launched in Japan in 2001, and the main improvements for this generation of mobile systems is that it enables an increased transferring speed of information to mobile phones and other mobile apparels. The 3G system of mobile networks is also called UMTS (see “UMTS”) and it promises to improve the possibilities to send and receive pictures and film and to enable a usage of the internet increasingly similar to the way it can be used on a PC.

Android

Google’s open source platform for mobile phones (including an operating system). It was launched in November 2007 and created by a consortium of companies in the telecommunications industry.

Applications

The different software devices that you add to the existing platform. Examples of applications are the internet browser or the software that makes it possible to listen to music in the mobile phone.

ASP

Average sales price. Normally used as an abbreviation when talking about the average selling price for mobile phones.

Cyber-shot

Sony Ericsson's line of camera mobiles.

GPRS

General Packet Radio Service, which has been labeled as a 2,5G mobile system. GPRS facilitates upgrading of the existing GSM networks. This will further improve the transmission capacity for mobile data communication.

GSM

Originally an abbreviation for *Groupe Special Mobile*, however, this was later changed to *Global System for Mobile Communications*. Also referred to as 2G mobile technology (see "2G").

Linux

A non-proprietary operating system for PCs originally.

Microsoft Windows Mobile

More commonly referred to as Microsoft Mobile. This is Microsoft's software platform for mobile phones. The latest version is Microsoft Mobile 6.

NTM 450 and 900

NTM stands for *Nordic Mobile Telephony* group and this early system (the 450) was established in the Nordic countries in 1981. It was the first automatic system for mobile telephony. In 1986, NTM 900 was added. "450" and "900" represents the frequencies of 450 MHz and 900 MHz respectively, used for the two systems. Also referred to as 1G mobile technology.

Open Handset Alliance (OHA)

The alliance consists of more than 30 technology and mobile leaders, including Motorola, Qualcomm, HTC and T-Mobile. OHA aims at creating a greater openness in the mobile ecosystem. They believe that increased openness will enable everyone in the telecom industry to innovate more rapidly and respond better to consumers' demands.

Open platform

The term open platform refers to platforms based on open source (see “open source”), that is non-proprietary platforms.

Open source

When a software is “open source” its “source code must be distributed with the software or otherwise made available for no more than the cost of distribution. Anyone may redistribute the software for free, without royalties or licensing fees to the author. Anyone may modify the software or derive other software from it, and then distribute the modified software under the same terms.”²²²

Proprietary platform

In order to use the proprietary platform you are forced to buy a license from the platform owner.

Smart phone

There is no clear defined criteria for what a smart phone is. Some describe it as a phone with advanced multimedia applications or data applications or as a phone with an open operating system for which the user can add and remove applications in a relatively free way and that the smart phones are somewhere between a mobile phone and a PC.

Software platform

The software that is the foundation for other software applications added on the phone. Usually includes an operating system.

Symbian

Symbian is a software platform and operating system for mobile phones. It is owned jointly by Ericsson, Nokia, Panasonic, Samsung, Siemens and Sony Ericsson. The platform was created in order to provide an alternative to Microsoft Mobile.

UMTS

Universal Mobile Telecommunications System. It is also referred to 3G (“see 3G”).

²²² Weber (2007) p. 5

Walkman

Sony Ericsson's line of mp3-phones

Web 2.0

Dating from 2004, the term Web 2.0 is variously understood as new forms of website development and delivery technology, changing uses of the Internet to emphasize sociability over consumption, new understandings of the possible financial exploitation of the web, and more broadly, a new way of thinking about the Internet as a whole

Xperia

Sony Ericsson's new line of phones, based on Microsoft Mobile 6. This is the first line of phones where Sony Ericsson uses Microsoft Mobile as OS.

Appendix 2 – Sony Ericsson’s mobile phone series

- **C series** (*"Cyber-shot"*) - *Cyber-shot branded mid to high-end camera solutions.*
- **D series** (*"Deutsche Telekom"*) - *T-Mobile operator exclusive.*
- **F series** (*"Vodafone"*) - *Vodafone operator exclusive.*
- **G series** (*"Compact series"*) – *Compact mid to high-end smart phone series.*
- **J series** (*"junior"*) - *Low-end phones without camera.*
- **K series** (*"kamera", Swedish*) - *Low to high-end phones all with camera, and some even with Cyber-shot branding.*
- **M series** (*"messaging"*) - *Mid-end smart phones running Symbian UIQ and all having a QWERTY keyboard.*
- **P series** (*"PDA"*) - *High-end smart phones running Symbian UIQ and almost all having a QWERTY keyboard.*
- **R series** (*"Radio"*) - *Low-end phones featuring advanced AM/FM radio capabilities.*
- **S series** (*"slider" / "swivel"*) - *Mid-end phones with either a slider form factor or a swivel design.*
- **T series** (*"fashion"*) - *Mid to high-end phones with fashionable design.*
- **V series** (*"Vodafone"*) - *Mid-end Vodafone operator exclusive.*
- **W series** (*"Walkman"*) - *Low to high-end Walkman branded music phones with special music accessories.*
- **X series** (*"XPERIA"*) - *XPERIA branded high-end smart phones.*
- **Z series** (*"clamshell"*) - *Low to mid-end clamshell phones often fashion-related.*²²³

²²³ Unofficial Sony Ericsson Blog – Sony Ericsson <http://blog.se-nse.net/sony-ericsson/> (2008-05-31)

Appendix 3- Members of the Open Handset Alliance

Mobile operators:

China Mobile Communications Corporation

KDDI CORPORATION

NTT DoCoMo, Inc.

Sprint Nextel

T-Mobile

Telecom Italia

Telefónica

Semiconductor companies:

Audience

Broadcom Corporation

Intel Corporation

Marvell Semiconductor, Inc.

NVIDIA Corporation

Qualcomm Inc.

SiRF Technology Holdings, Inc.

Synaptics, Inc.

Texas Instruments Incorporated

Mobile Phone Manufacturers:

HTC Corporation

LG Electronics, Inc.

Motorola, Inc.

Samsung Electronics

Software Companies:

Ascender Corp.

eBay Inc.

Esmertec

Google Inc.

LivingImage LTD.

LiveWire Mobile

Nuance Communications, Inc.

PacketVideo (PV)

SkyPop

SONiVOX

Commercialization Companies:

Aplix Corporation

Noser Engineering Inc.

TAT - The Astonishing Tribe AB

Wind River²²⁴

²²⁴ Open Handset Alliance – Members (2008)