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Lund University

Exploring competition in hypercomplex business landscapes

- An in-depth case study of mobile TV/Video at Sony Ericsson Mobile Communication

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“The specifics of competition change every day, but I do not believe that the fundamentals of competition change very much at all”

(Porter 2002:46)

Summary

Title: Exploring competition in hypercomplex business landscapes – An in-depth case study of mobile TV/Video at Sony Ericsson Mobile Communication

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Problem discussion: What is essential for Sony Ericsson to consider when introducing the mobile TV/Video service? Given a technological development, such as mobile TV/Video, how does it affect a company's strategic possibilities and value chain positioning?

Purpose: To explore the nature of the mobile TV/Video service, define the new business landscape of converging industries and develop a framework enabling Sony Ericsson enhanced navigation assistance.

Methodology: We explored the mobile TV/Video service by conducting a qualitative case study. We used an abductive reasoning as well as a moderate normative reasoning since we also generated five concluding considerations to Sony Ericsson.

Conclusions: In order to deliver mobile TV/Video to the consumer, a value chain consisting of companies from both the media and telecommunication industry is needed. In addition, there are two major technologies competing to become a standard, MBMS advocated by Ericsson and DVB-H pushed by Nokia. The various participants have different motives with the introduction of mobile TV/Video, which may affect their strategies and positioning.

Our definition of *hypercomplexity* is:

A business landscape composed of converging industries that demonstrate intense competition or even conditions of hypercompetition in part of or in the entire value chain of the service or the product. Few technological standards and substantial size variation, in terms of market shares and revenues, between the competing companies also affect the prerequisites. Combined with high uncertainties regarding future consumer market development, the landscape constitutes a hypercomplex business environment.

By utilising our framework, the following recommendations to Sony Ericsson could be formulated:

1. Sony Ericsson should consider initiating cross-industry cooperation and alliances with other mobile phone manufacturers, mobile network operators and infrastructure suppliers.

2. Sony Ericsson should consider the dominant design DVB-H and invest only in that distribution technology in order to reduce the R&D and integration costs.

3. Sony Ericsson should consider adapting both a differentiated and a cost focus strategy simultaneously in order to create healthy margins.

4. Sony Ericsson should consider the follower strategy in order to reduce the uncertainties and compete on brand, design and superior user-interface instead. However they may also recognise the disadvantages with this strategy.

5. Sony Ericsson and the other participants in the mobile TV/Video value chain should consider co-creating a market by deciding to use a common standard technology, which all could profit from.

Key words: Hypercomplexity, hypercompetition, mobile TV/Video, DVB-H, MBMS, strategic alliances, converging industries, value chains and business models

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Finally, this thesis had not been possible without the support and encouragement from our families and loved ones, you know how you are.

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Martin Modig & Jonas Stålenhag

1 Introduction

This chapter describes the background of our thesis and what questions we find essential to examine as well as stating our purpose and illustrating a disposition of our thesis.

1.1 Background

Sony Ericsson Mobile Communication[1] was established in 2001 when the media giant Sony and the telecommunications company Ericsson initiated a 50:50 joint venture with the mission to establish Sony Ericsson as the most attractive and innovative global brand in the telecommunication industry. Four years later, in 2005, Sony Ericsson had 5,000 employees worldwide and generated total revenues of 55 SEK billion, equivalent to almost 52 million sold mobile phones.[2] As illustrated in Figure 1:1, the company currently has a market share of 5.9 %, implying a less dominant market position since the combined market share of the top three mobile phone manufacturers amounts to 66.2 %[3].

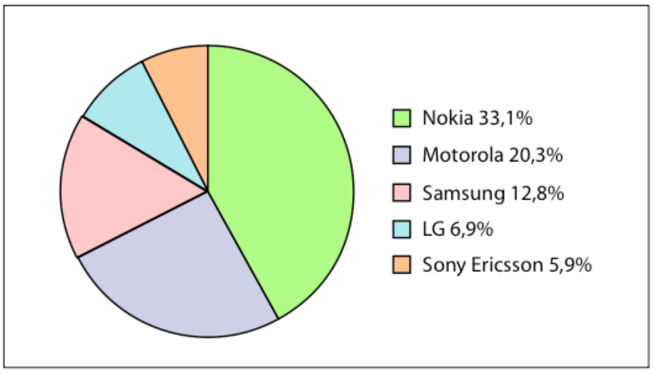

Figure 1:1 *Global market share by mobile phone manufacturer*

Today, the mobile phone manufacturers' products contain, in addition to voice applications, features such as imaging, video, music, gaming and email. Sony Ericsson's camera and Walkman-branded music phones, placed in the middle to high-end segment, have been highly successful in the consumer market as a complement to ordinary portable devices. TV may be the next and, according to the independent telecommunication consulting firm Strategy Analytics, one of the few macro entertainment categories left to exploit.[4] We believe this technological development might give birth to new strategic possibilities for the media and telecommunication industry. Cronström, Senior Manager Business Strategy at Sony Ericsson, states that the company views *mobile TV/Video* as an important area and will probably support these features in their future phones[5]. However, the top four mobile phone manufacturers have already announced mobile TV/Video enabled phones[6], thus we expect a Sony Ericsson phone with these features to be introduced in a near future.

In our thesis, mobile TV/Video is defined as a *service* in the mobile phone that presents the consumer with a TV-like user experience. This includes live or scheduled content, i.e. live-TV or video clips, delivered to the consumers' mobile phone across either a cellular or broadcast network. Due to the nature of the service companies in the media and the telecommunication industry probably will cooperate in developing a pleasing service to the consumer. In the resulting value chain, Sony Ericsson most likely will hold an indirect position acting as a service enabler and an intermediary between the mobile network operator and the consumer. The reason to study how Sony Ericsson may act in the mobile TV/Video chain could be even more interesting due to the fact that they do not seem do possess a dominant position in the value chain. Hence, the less dominant position may imply a greater need to strategise and position itself against the other, more influential participants, in order to capture revenues with the introduction of the new service. Figure 1:2 is illustrating a simplified value chain with examples of different participants.

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[1] Sony Ericsson Mobile Communication will henceforth be presented as Sony Ericsson
[2] Ericsson Annual Report 2005
[3] Strategy Analytics Insight (2006-04)
[4] Ibid (2006-01)
[5] Cronström D. (Interview, 2006-03-08)
[6] Ovum (2006-04)

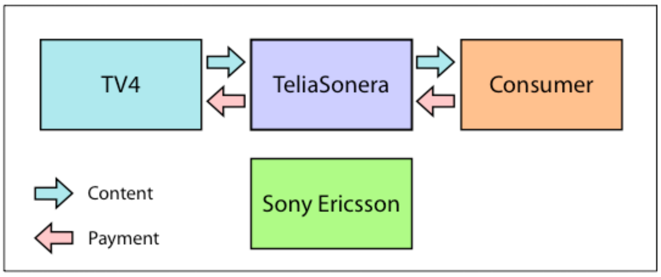

Figure 1:2 *Simplified value chain delivering mobile TV*

In the example TV4 is the content provider producing live-TV and video clips, which Telia Sonera, the mobile network operator, purchases and distributes to its mobile phone portal. The consumer accesses the portal and watches the content on the mobile phone and is then charged on a subscription or pre-paid basis. Generally, the mobile network operator receives the revenues and a pre-negotiated fixed percentage of the revenue is distributed backward to the content provider[7]. As Figure 1:2 implies, the mobile phone manufacturer, i.e. Sony Ericsson, does not hold any compensation from the content revenues generated in the mobile TV/Video value chain.

1.2 Problem discussion

The mobile phone manufactures are experiencing a highly competitive market with decreasing prices of their products[8]. In order to increase sales volume and raise selling prices, the mobile phone manufacturers' rapid technological development has evolved the mobile phone into an advanced product integrating functions from related industries as well, such as digital cameras and portable music players. Mobile TV/Video is potentially a new revenue generating service for all the different participants involved in the value chain[9], but among the top five manufacturers, Sony Ericsson is the only company that has not yet announced a mobile TV/Video enabled phone[10]. Sony Ericsson, and other manufacturers as well, are under strong influence from mobile network operators, who are among the companies' larger customers.[11] In addition, the mobile network operators are experiencing financial stress due to heavy investments in 3G-networks[12]. Hence, the participants in the telecommunication industry are currently anticipating mobile TV/Video to be the new success service. The telecommunication and media industry seem to converge due to the functions and services, such as mobile TV/Video, implemented in the mobile phones become more advanced and media rich. Nevertheless, the nature of the service, i.e. the need of content, might imply that companies in the media and the telecommunication industry possibly will cooperate in order develop a pleasing service to the consumer.[13] The mobile TV/Video service is also likely to be designed to use different distribution technologies in different part of the world. Both cellular broadcasting and digital terrestrial broadcasting technologies are suggested to become standards and this could potentially result in a standard war where Ericsson is advocating cellular broadcasting while Nokia is promoting the digital terrestrial broadcasting technology. The emergence of new distribution technologies also enables new participants, such as broadcasters, to enter the telecommunication market. These could possibly compete or cooperate with the mobile network operators in delivering the service, thus affecting the mobile TV/Video value chain.[14] Sony Ericsson's *position* in the mobile TV/Video value chain is likely to affect the bargaining power if establishing new business models. Also, Sony Ericsson's *role* in the mobile TV/Video value chain is also likely to affect the possibility to absorb the generated revenues. Consequently, the mobile TV/Video business model needs to be examined.

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[7] Sjödén P. (Interview, 2006-02-21)
[8] Ovum (2006-03)
[9] Strategy Analytics Insight (2006-01)
[10] Thompson D. (Interview, 2006-03-08)
[11] Sandgren J. (Interview, 2006-04-21)
[12] Ovum (2006-04)
[13] Nilsson M. (Interview 2006-02-22)

Market research is imperative when introducing new product or services in order to understand *the consumer* demands and requirements[15]. We believe this to be equally important with mobile TV/Video when being launched by pioneering companies in a rather immediate future. However, when pioneering the market, uncertainties regarding what the consumer market will award tend to be greater compared to companies who have adopted more of a follower strategy[16]. Even so, it might not be risk-free to enter a market at a later time, since the market could be experiencing technology lock-in or be dense due to many entrants.[17] Different industries will possibly also converge into a common mega-industry, such as the media and telecommunication industry regarding mobile TV/Video, with new competitors or possible partners and the outcome is a new and very complex business landscape for companies to compete and navigate in.[18] Accordingly, we acknowledge a need to define this business landscape and to develop a framework enabling enhanced navigation assistance. Important industry parameters, such as uncertainty, maturity, characteristics and technological disorder as well as the company's strategic window may be essential to examine and discuss in the case of mobile TV/Video. Current strategic tools such as strategic planning and positioning may be useful to Sony Ericsson when handling such complex issues. Finally, we recognise the need to examine how technological development affects Sony Ericsson's strategic possibilities and value chain positioning. However, we found that existing theories were not sufficient to understand and guide Sony Ericsson in its competitive business landscape, thus our thesis originated to define the framework of 'hypercomplexity' in order to provide enhanced navigation assistance. Therefore, we find the following questions necessary to examine:

- *What is essential for Sony Ericsson to consider when introducing the mobile TV/Video service?*

- *How does technological development, such as mobile TV/Video, affect a company's strategic possibilities and value chain positioning?*

1.3 Purpose

To explore the nature of the mobile TV/Video service, define the new business landscape of converging industries and develop a framework enabling Sony Ericsson enhanced navigation assistance.

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[14] Steiber R. (Interview, 2006-03-08)

[15] Kotler P. (2002)

[16] Grant R.M. (2001)

[17] Heracleous L. (2003)

[18] Hitt M.A., Keats B.W., DeMarie S.M. (1998)

1.4 Disposition

1 Introduction. This chapter describes the background of our thesis and what questions we find essential to examine as well as stating our purpose and illustrating a disposition of our thesis.

2 Methodology. This chapter describes our research design and how we conduct a qualitative case study of mobile TV/Video at Sony Ericsson. The data gathering background and process is also presented and we conclude the chapter with a methodological discussion.

3 Empirical findings. This chapter describes the consumer's evolving TV-experience and why mobile TV/Video is regarded to be a new revenue generating service. Different distribution technologies are explored together with an in-depth examination of the participants in the complex value chain needed to deliver mobile TV/Video. Finally, we conduct an outlook for mobile TV/Video as well as discuss what theoretical considerations that additionally should be explored.

4 Theoretical findings. This chapter describes important the industry parameters that were identified in the empirical findings and what implications they have to the pioneering or following company. The outcome composes a respectable foundation for the company to appreciate the strategic toolbox. However, we also realise that reality is far more complicated and a new hypercomplex business landscape emerge that should be characterised and defined to enable successful navigation.

5 Analysis. This chapter describes how we examine different arenas of competition as well as the evolution of hypercompetition into hypercomplexity. As a result of our empirical and theoretical findings, we develop a framework containing five considerations aiming to guide Sony Ericsson in the hypercomplex business landscape. Finally, we examine the mobile TV/Video business model and how the revenues will be divided through the value chain.

6 Conclusions. This chapter describes how we recapitulate our findings from the analysis chapter and compile recommendations to Sony Ericsson. In addition, we render general recommendations from our research, and we question if they may be applicable outside the mobile TV/Video case.

7 Future research. This chapter describes what we suggest as future research regarding our thesis.

2 Methodology

This chapter describes our research design and how we conduct a qualitative case study of mobile TV/Video at Sony Ericsson. The data gathering background and process is also presented and we conclude the chapter with a methodological discussion.

2.1 Research design

Our thesis aimed to expand the general understanding with regards to the questions at issue. We conducted a review of mobile TV/Video to find out what is essential for Sony Ericsson in order to successfully introducing the future mobile TV/Video service among the consumers. Key points crystallised from our empirical materials were used to allow a discussion regarding important theoretical reflections utilising inputs to our theoretical examination. In addition, our theoretical findings also highlighted the significance for Sony Ericsson to understand critical industry parameters as well as what tools the company might include in its strategic toolbox. However, we found that existing theories were not sufficient to understand and guide Sony Ericsson in its highly competitive business landscape. Thus, our thesis originated to define the framework of *'hypercomplexity'* to provide enhanced navigation assistance. Furthermore, with these preconditions in mind, we have been focusing on the creation of theory, rather than its justification. This is recognised by Alvesson and Kärreman who emphasise the potential of empirical materials as a resource for developing theoretical ideas through the active mobilization and problematisation of existing frameworks. In particular, they illustrate how empirical material can be used to facilitate and encourage critical reflection by enhancing our ability to challenge, refute, rethink, refine and illustrate theory.[19]

The empirical and the theoretical research in our thesis involved a high level of complexity. When studying and examine such systems, we believe it is essential to perceive details and uniqueness in the gathered findings. Also flexibility is needed during the process of concluding our thesis because the problem discussion has several times changed due to our increasing knowledge and understanding of the initial questioning. In general, we have tried to be open-minded to make reasonable judgements of our findings. To fulfil our purpose we chose to conduct a qualitative case study since the method provides an opportunity to collect empirical data reflecting the complications of real-life settings. Yin also stresses that case studies are the preferred strategy when “how” or “why” questions are being proposed, when the researcher has little control over events and when the focus is on a contemporary phenomenon within some real-life context. He further concludes that the case study method allows an investigation of holistic and meaningful real-life events, such as the maturation of industries, which we found to be an important implication in the telecommunication industry.[20] Ilinitch et al further state that a highly competitive market is a dynamic process and it should be studied with methods capable of capturing dynamic phenomena. Certainly, they believe that industry case studies represent context-rich approaches for gaining insights into such a matter.[21] However, as Alvesson and Sköldberg clarify, we are aware of the common complaint about case studies that no verification of the results is conducted following the theory generation[22].

Eisenhardt additionally stresses that many pieces of theory-building processes are evident in the literature but, at the same time, there is substantial confusion about how to combine them[23]. However, with the case study research we obtained a method that could both assist us to plan and assess the analysis as well as ensure a comprehensive analysis of the collected data. Thus, according to Nilsson, our working method was inductive of nature since such reasoning develops theory based on empirical observations[24]. This is also in conjunction with Alvesson and Kärreman, who advocate the use of empirical material as input for theory generation[25]. Acknowledging the importance of collecting empirical material, we conducted most of our data gathering before initiating theoretical reasoning in order to not try to affect our findings with regard to theoretical frameworks. However, as Eisenhardt continuous, it is admittedly impossible to achieve the ideal of a clean theoretical state[26]. Recognising the influence of our prior knowledge about the telecommunication industry and theoretical frameworks, it is likely that our thoughts, to a minor extent, have been affected. Nevertheless, we were aware of such concerns and, as Alvesson and Kärreman emphasise, the inference mechanism that guides such theory development is usually labeled abduction rather than purely induction[27]. Kovacs and Spens furthermore stress that the abductive research approach stems from the insight that most advances neither follows a pattern of pure induction or of pure deduction[28]. Nevertheless, we tried to not initiate the analytical process until we had acquired a higher level of understanding of our questions at issue, both regarding the empirical and theoretical findings enabling a more in-depth discussion to be conducted. Our thesis also leads to recommendations for Sony Ericsson about how the company could successfully navigate in the hypercomplex business landscape, indicating the use of a more moderate normative approach[29].

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[19] Alvesson M., Kärreman D. (Forthcoming)

[20] Yin R.K. (1989)

[21] Ilinitch A.Y., D'Aveni R., Lewin A.Y. (1996)

[22] Alvesson M., Sköldberg K. (1994)

[23] Eisenhardt K.M. (1989)

2.2 Data gathering background

We tried to be open and empirically driven but we were aware of our unavoidable shaping from prior knowledge. However, as Alvesson and Kärreman suggest, we attempted to restrain such influences in the beginning of our work procedure to allow the empirical material an opportunity to speech[30]. We revised some articles about mobile TV/Video in order to prepare the interview questions and the result of our empirical findings illustrated that there was a great need for an extensive theoretical study. Consequently, we conducted research in both well-established theoretical frameworks and in newly published articles in the leading business journals based on our empirical findings. Our thesis therefore also reflects a core value of *technology management*, due to the close relationship between technology and a more strategic management perspective. Nevertheless, considering the resources available we had to concentrate on a single case study. We are aware about the fact that this approach might be criticised for only generating a local empirical theory but, as acknowledged by Alvesson and Sköldberg, we still believe that our findings are useful and that they will contribute to the existing body of knowledge[31]. On the other hand, by limiting the study to only concern a single case study, we were able to perform a more in-depth study enabling us to understand the interrelationships of separate data. Due to the thesis's limited resources, we would not have been able to achieve the same depth in our examination if we had chosen to perform several cases.

Our thesis examined the development of mobile TV/Video and our tutors at Sony Ericsson had predetermined the subject. However, besides this delimitation, we were allowed to concentrate and design our thesis in what way we found plausible. We discovered the case study of mobile TV/Video to be complex and involved many different categories of companies from both media and telecommunication industry. Therefore, we chose to conduct interviews with one or more companies in each category based on the common denominator that they all had opinions regarding mobile TV/Video, both positive and negative. Another implication with mobile TV/Video is alternative distribution technologies. We have studied the two main categories, i.e. cellular broadcasting and digital terrestrial broadcasting. In each category, the most likely distribution technologies to become globally accepted standards, based on our tutors' knowledge, were explored. To verify their statements we also used independent consultant and business intelligence reports.

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[24] Nilsson C-H. (1994)

[25] Alvesson M., Kärreman D. (Forthcoming)

[26] Eisenhardt K.M. (1989)

[27] Alvesson M., Kärreman D. (Forthcoming)

[28] Kovacs G., Spens K.M. (2005)

[29] Artsberg K. (2003)

[30] Alvesson M., Kärreman D. (Forthcoming)

[31] Alvesson M., Sköldberg K. (1994)

2.3 Data gathering process

The empirical base of our case study consisted of a total of 18 interviews with seven different companies. The people chosen for our thesis were all responsible for mobile TV/Video related issues at each company but due to the nature of the different companies, the interviewees had different work assignments. Most of the persons interviewed were found through our tutors' personal contacts. We believe this enlighten the first contact since they had been informed and were prepared for us contacting them. When no personal contacts were found, we used the company's telephone switchboard and homepage in order to locate the most correct person to talk to. After this initial contact we followed-up with an email once again describing our purpose and why we would like to interview the person. The interviewees have not read our final interpretation of the interviews but we have emailed the main outline in order for them to respond on issues needed clarification. With the number of conducted interviews, we believe that we have been able to gather a more full perspective of the case with lesser risk of missing important details or having a case that grew out of our control[32]. At the same time, because we preferred live interviews prior to telephone or email interviews, the closeness to the company also was a selection criterion.

To achieve an in-depth study, we carried out interviews with participants from each category in the value chain, such as content providers, mobile network operators and mobile phone manufacturers, needed to deliver mobile TV/Video. All the interviews were conducted during a narrow time-period and the majority of interviews lasted for about an hour. We were aware of the risk that when interviewing people they might be subjective in order to embellish their own and the company's efforts[33]. In order to maintain a high level of objectivity, we tried to interview employees from both different departments and levels of the companies. We had also worked out a base of discussion for the interview questions and with our semi-structured interview technique, the interview's main questions were used as a checklist for issues that had to be covered during the interviews. The nature of the interviews was open and, as Alvesson and Kärreman stress, rather than assume that the interviews are reporting authentic experiences, we saw the interviews as politically motivated producers of what are for them favorable "truths"[34]. Therefore, when we found that the discussion moved towards new and interesting areas relevant to our subject, we pursued and probed the new directions. In addition, both of us participated in all the interviews but our roles were decided in advance and rotated between being the questioner and the secretary. All interviews were recorded in order to review the data at later stages in our process since we, at this point, did not do any editing or reviewing of the different interviews. This was considered in order to ensure that details and differences were not forsaken before the analysis was made. Thus, our primary data sources consist foremost from Swedish companies involved in mobile TV/Video. In order to verify our findings we have consulted secondary data sources, such as annual reports, independent consultant reports and to lesser extent electronic sources, with information about global companies and their involvement in mobile TV/Video. We have naturally also consulted and reviewed existing theoretical frameworks in order to find answers to the questions at issue.

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[32] Yin R.K. (1989)

[33] Alvesson M., Sköldberg K. (1994)

[34] Alvesson M., Kärreman D. (Forthcoming)

2.4 Methodological discussion

The ability of our thesis and its conclusions to produce *valid* results is a significant issue.[35]. Some of our observations might be unique for our problem discussion with mobile TV/Video, while others provide an insight into matters that apply to other more generalised problem discussions as well. Nevertheless, we believe that the issue of validity appears in a different context when our main purpose with the thesis is to expand general understanding about the nature of mobile TV/Video service as well as to define hypercomplexity and establish a framework providing Sony Ericsson guidance. In addition to further strengthen our findings, we conclude with discussing the four criteria of trustworthiness; credibility, transferability, dependability and confirmability[36].

Our thesis did not aim to creating generalisations of our results since we only conducted a single case study about mobile TV/Video and therefore we did not focus on transferability in our study. However, we did question if our findings, including our new hypercomplexity framework, could be applied in different industries and is further discussed in our conclusions and future research suggestions. The criterion of confirmability concerns that establishing of data and interpretations of the findings are not figments of our or the interviewees' imagination, but are clearly derived from the empirical material gathered. This criterion was also difficult to apply since we have been conducting several interviews that all have, to a minor or larger extent, been coloured by the interviewee's subjectivity. In order to obstruct such a weakness, we have been using multiple sources including both, when possible, different interviewees at the same company as well as consulted secondary sources making triangulation of the empirical material possible. The next criterion of trustworthiness' credibility and addresses the issue of fit between the interviewees' views and our representation of them. To enable a high credibility in our thesis and correct reproduction of the material, we recorded all interviews in order to review the data at later stages in our working process. Furthermore, even if the interviewees have not read our final interpretation of the interviews we have emailed the main outline in order for them to approve and to respond on issues needed clarification. Finally, dependability is the last criterion of trustworthiness and was an important aspect of our thesis since the replicability implies that the data collection procedures can be repeated with the same results.[37] However, it is imperative to keep in mind that our methodological process heavily relies on data material, which is provided by the interviewees. It is of course impossible to completely eliminate effects of an interviewee's personal impact. We have tried to minimise the effects by having a narrow time frame when conducting our interviews in order to more rapidly gather the data. Nevertheless, the data material (only) reflects the interviewee's interpretations just as the analysis and conclusions reflect our interpretations of these interpretations.[38]

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[35] Alvesson M., Sköldberg K. (1994)

[36] Ibid

[37] Tobin G.A., Begley C.M. (2004)

[38] Alvesson M., Sköldberg K. (1994)

3 Empirical findings

In this chapter we present the consumer's evolving TV-experience and why mobile TV/Video is regarded to be a new revenue generating service. Different distribution technologies are explored together with an in-depth examination of the participants in the complex value chain needed to deliver mobile TV/Video. Finally, we conduct an outlook for mobile TV/Video as well as discuss what theoretical considerations that additionally should be explored. All estimations completed by us are illustrated towards the end of this chapter and we also introduce different key points to facilitate the reader's understanding.

3.1 The consumer's evolving TV-experience

The way people consume media, such as live-TV, video and audio, are changing due to the emergence of multi-channel digital TV, web-TV, broadband, video-on-demand, personal video recorders and mobile audio/visual devices. This is likely to result in an important shift, from the question of *what is on* TV to *what do we want to see on TV*. Nilsson, Media Consultant at Mediavision, expresses that TV as a media is evolving and states that the classification of TV has become more complex.[39] Today, the consumer has the ability to choose between terrestrial, cable and satellite TV in both analogue and digital form. In addition, the channels are local, regional, national and international. However, most of the grandiose digital TV strategies are currently revised due to the reason that the plans forgot to take *the consumer* into account. The lessons learned are that the consumers do not react to content offer in isolation but they instead compare it with the alternatives when deciding on its value. Hence, viewers do not care if they receive TV-programs in digital or analogue form or by whatever means. The success of development of any new technology and form of TV is dependent on the content offered and the perceived value added offered to the consumer.[40]

The development of mobile TV/Video presents the consumer with her favourite TV-entertainment in the mobile phone independent of her location. We regard it to be a potential value-added service if the consumer finds the quality and the price attractive. Globally, we forecast a total market value of the mobile TV/Video to be as much as US $45 billions in 2010 with sales of handsets representing US $30 billions and the service generating the remaining US $15 billions. Thus, there is a likely opportunity to Sony Ericsson and other mobile phone manufacturers as well as broadcasters and mobile network operators, to increase their revenues by presenting mobile TV/Video services to the consumer market. In addition, content providers are likely to gain from the introduction due to the service's need of content.

Today, the consumer also has a greater ability to choose and control the media she wants to consume. For example, the consumer can access TV/Video content using her computer to download shows over the Internet and watch it on the computer, or transfer it to the mobile phone and consume it wherever and whenever she wants to. According to Nelson, Director Business Strategy at Sony Ericsson, the mobile phone is evolving to become a complement of ordinary portable devices, such as MP3-players, digital cameras and video players.[41] We observe this envision and question if it will be more common for the consumer to transfers content to the mobile phone using other networks, such as broadcasting networks, instead of the mobile network operator's. However, when content is distributed outside the mobile phone network, an implication to the mobile network operator is a loss of potential revenues from data traffic. Thus, the mobile network operators are likely to prevent this development by not buying, or subsidising, mobile phones enabling such services. This could affect Sony

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[39] Nilsson M. (Interview, 2006-02-22)

[40] Papathanassopoulos S. (2005)

[41] Nelson J. (Interview, 2006-01-28)

Ericsson due to the fact that the mobile network operators are one of Sony Ericsson's largest customers.[42]

Nilsson further states that there is currently no direct relationship between the media and telecommunication industry but believes that the two industries are likely to be converged to a greater extent than before due to the emergence of mobile TV/Video. Therefore, Nilsson argues that the media industry should also expect to be affected by this development.[43] In addition, we have found that one of the media industry's largest concerns is how the new value chain is likely to evolve. All in all, the participants in the media and telecommunication industry are watching each other's steps carefully.[44]

Based on our empirical findings we have observed the following:

Key point #1
Different industries may converge due to the emergence of technological development, thus companies should regard and consider, in addition to their own, contiguous industries as well.

3.2 The need of a new revenue generating service

Consumers watching mobile TV/Video could, according to the independent telecommunication consulting firm Strategy Analytics, possibly be one of the last macro entertainment categories left to exploit by the telecommunication industry.[45] However, in order for mobile TV/Video to become a successful service, we believe it is important to not repeat the mistakes made regarding the introduction of video calling. According to Tedenvall, Senior Staff Engineer at Sony Ericsson, the telecommunication industry regards video calling as a failure, since the consumer experienced poor 3G-coverage and a low quality service making it difficult and uninteresting to use. Furthermore, the consumer thought video calling was more complicated than "ordinary" voice calls and too private to share with people besides family and closest friends. The outcome for the mobile network operators has been a lack of revenues generated from video calling, despite their subsidisation of video calling enabled phones.[46] We question if the telecommunication industry did review and anticipated consumer demand and requirement prior to the launch of the new service. Thus, we consider it to be imperative that the different participants in the value chain together develop and deliver functional as well as value added services, which *the consumer* finds attractive. This is likely to become even more important since mobile TV/Video, according to us, might require cooperation across the boundaries between the media and telecommunication industry. We have also observed that the cooperation between the industries probably will affect and delay the different participating companies' choice of when to enter the market. Numerous stakeholders' decisions always require more time and effort than when a single company dictates the terms.

In addition, we stress that to realise a new potential revenue generating service, important critical success factors for mobile TV/Video should be established and understood. One such factor is, according to Sandgren, Manager Application Planning at Sony Ericsson, the ease of use for the consumer when watching mobile TV/Video. He also believes that a simple set-up and instalment as well as a straightforward handling and navigating of the application in the mobile phone are of importance.[47] Another essential factor is, according to Dornhoff, Technical Director at Net-M, the content package presented to the consumer. The alternatives could include regular terrestrial channels as well as content made of existing material from traditional television programs and unique mobile TV/Video content. Dornhoff recommends a mixture of both and argues the importance of remembering that unique content still needs strong branding to become popular. Ways of successfully manage the situation could be to use celebrity endorsement or, for instance, episodes from a popular soap to market the content as well as sport clips and the latest news.[48] Nilsson confirms this view when stating that companies providing content should offer:[49]

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[42] Sandgren J. (Interview, 2006-04-21)
[43] Nilsson M. (Interview, 2006-02-22)
[44] James M. (2006)
[45] Strategy Analytics Insight (2006-01)
[46] Tedenvall M. (Interview, 2006-03-15)
[47] Sandgren J. (Interview, 2006-03-02)

- Broad media, such as sports, news, film, music, entertainment, drama and soaps
- Niche medias that target a narrow consumer group
- Interactive content, such as voting and greetings

Nevertheless, the consumer must find the content interesting and reasonably priced in order to purchase the mobile TV/Video service. Table 3:1 presents a newly conducted test by Nokia and indicates that 83% of the test group were satisfied with the mobile TV/Video service and 76% said they would sign up for the service within 12 months. In France, 68% said that they were willing to pay for the service compared to 55% in Spain. Nokia concludes that the willingness to pay for mobile TV/Video services is rather high and the most preferred method of payment is a monthly subscription for a package of channels. The Finnish test group were willing to pay US $10 while the French were willing to pay US $7 per month for the mobile TV/Video subscription package.[50]

	Finland	**UK**	**Spain**	**France**
Positive response to mobile TV	58% believe the service would be popular	83% are satisfied with the service	75% would recommend the service	73% were satisfied with the service
Willingness to pay for mobile TV	41%	76%	55%	68%
Acceptable monthly fee for mobile TV	$10	-	$5	$7

Table 3:1 *Results from Nokia's trial*[51]

Nilsson argues another important aspect of the matter when declaring that the consumer must understand that mobile TV/Video not is a substitute for traditional television. The service will not replace but instead complement the media that preceded it. The peak hours of regular TV is between 19:00 and 22:00 in the evening, and the content offered are popular TV-shows and movies. Mobile TV/Video will also have a different viewing pattern, i.e. consumers will use the service as a pastime when, for example, waiting in the bus line or commuting.[52] Therefore, we suggest that the peak hours will be in the morning, lunch and afternoon, e.g. when people are commuting or having breaks.[53] The consumer's usage is likely to result in short viewing sessions and Sjödén, Business Development Manager at Ericsson, estimates a couple of minutes per viewing session[54]. However, Lindahl, Business Development Manager at Teracom, believes that the viewing sessions will be more around 20 min and a total of almost three hours per week.[55] Hence, we conclude that it is uncertain how much the consumer actually will use the service and therefore no certain consumer requirements are yet fully determined. This may cause uncertainties to Sony Ericsson's product development, regarding for example, screen size and power consumption.

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[48] Dornhoff C. (Interview, 2006-03-09)
[49] Nilsson M. (Interview, 2006-02-22)
[50] www.mobiletv.nokia.com
[51] Ibid
[52] Nilsson M. (Interview, 2006-02-22)
[53] Ibid
[54] Sjödén P. (Interview, 2006-02-20)
[55] Lindahl I. (Interview, 2006-02-21)

Even though there are uncertainties regarding consumer requirements, the top four mobile phone manufacturers; Nokia, Motorola, Samsung and LG, have already presented their first generation of commercial mobile TV/video enabled phones that use digital terrestrial broadcasting technologies. According to Ueda, Senior Manager Application Planning at Sony Ericsson, these phones will have significant power and dimension limitations as well as weak interface access to content[56]. The independent telecommunication consulting firm Ovum forecasts a sale of only 8 million mobile TV/Video mobile phones or 1 % of total units sold in 2006. Figure 3:1 indicates the inflection point for mobile TV/Video in 2008 and the sales volume will increase to approximately 120 million units in 2010, or 10 % of total units sold.[57]

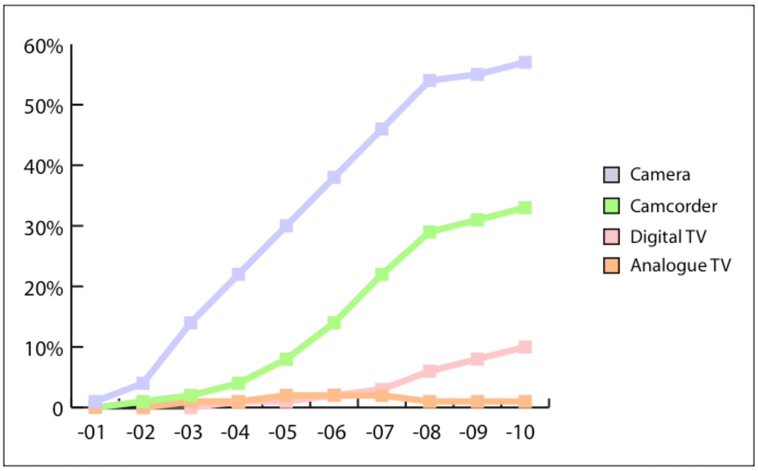

Figure 3:1 *Global imaging mobile phone sales of total sales*

We would like to stress that Ovum's numbers are just forecasts and predictions about a market outcome is always difficult to do. Nevertheless, a mass-marked penetration may be realised, according to us, earliest in late 2008 due to the fact that is likely to take some time for the media and telecommunication industry to deliver a fully functional service. A willingness to pay approximately $10 per month will, according to us, imply a market value for the service in 2010, based on the forecasted 120 million sold mobile TV/Video enabled phones that year, to be around US $15 billions. This number does not include the revenues generated from selling the handsets and, thus, we conclude that the mobile TV/Video service has a great potential for all the participants involved. Nevertheless, the revenues are once again only a forecast but we believe that the large estimated market value still functions as an important indication. Given this market development, we except Sony Ericsson to present their first mobile TV/Video enabled phone in 2007 in order to keep up with their competitors and seize market shares. However, as a consequence, Cronström suggests that Sony Ericsson is likely to gain more knowledge about the consumer market by waiting in order to not repeat the mistakes made regarding video calling[58].

Key point #2

Timing is important when introducing new products. Therefore, companies should evaluate and learn from prior product concepts, understand the consumer's requirements as well consider the consequences of pioneering the market.

3.3 Distribution technologies

Today's 3G-mobile phones and networks use unicast distribution, defined as communication in *both* directions between a single sender and single receiver over a mobile phone network[59].

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[56] Ueda K. (Interview, 2006-02-09)

[57] Ovum (2006-03)

[58] Cronström D. (Interview, 2006-05-05)

[59] Tedenvall M. (Interview, 2006-02-07)

Future mobile communication scenarios are likely to use broadcasting, which is more effective, since it only have to communicate in *one* direction between one single sender and multiple receivers. According to Stare, Technical Engineer at Teracom, unicast distribution is very inefficient since a point-to-point connection has to be established between the network and each mobile phone user[60]. As an illustrative example, imagine the distribution of mobile TV/Video, via current European 3G-networks, which have an ability to provide 10-20 simultaneous consumers in each cell with a rather low quality video transmission. When instead using a broadcast distribution system, it is possible to reach millions of potential consumers simultaneously with a high quality video transmission.[61] Therefore, with future broadcast distribution systems, we consider it to be important that the media and the telecommunication industry understand and take advantage of the possibilities in terms of cost efficiency and high quality services. However, we have also received indications of demand uncertainties and question if digital terrestrial broadcasting will be necessary. Sjödén confirms our view and he stresses that if realising a terrestrial broadcasting system in order to enable mobile TV/Video, new infrastructure have to be built in addition to the existing 3G-networks. Ovum estimates the initial investment in such a system to be around US $300 millions but the cost heavily varies depending on the country's geographical characteristics[62]. Furthermore, it is for the most part undecided who will make the investments in new infrastructure and Sjödén stresses that the participants' response in trials are always more positive due to the low cost of participation. [63] Hence, we think it is difficult to make general conclusions from these kinds of trials and to gain knowledge about what the consumer market will appreciate.

Globally, the two following distribution categories for mobile TV/Video will be explored:

- Cellular distribution technologies: 3G-streaming, MBMS
- Digital terrestrial broadcast: DVB-H, DMB-T, DAB and MediaFLO

Currently, South Korea has a commercial mobile TV/Video service, which is based on the satellite broadcasting distribution technology, DMB-S. Ueda believes that this distribution technology will continue to stay domestic in South Korea, which will result in low global market penetration. Also Japan has commercial mobile TV/Video services but based on the domestic ISDB-T distribution technology.[64] Therefore, these distribution technologies will not be further discussed in our thesis. Table 3:2 summarises the acronyms, definitions and advocators of the most significant distribution technologies.

Acronym	Definition	Advocators
MBMS	Multimedia Broadcast Multicast Service	Ericsson
DVB-H	Digital Video Broadcast - Handheld	Nokia, TI, Microsoft
DMB-T	Digital Media Broadcast - Terrestrial	Samsung, LG
DAB	Digital Audio Broadcast	Samsung, LG
MediaFLO	Media Forward Link Only	Motorola

Table 3:2 *Mobile TV/Video standards*[65]

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[60] Stare E. (Interview, 2006-02-21)
[61] Schiller J. (2003)
[62] Ovum (2006-03)
[63] Sjödén P. (Interview, 2006-02-20)
[64] Ueda K. (Interview, 2006-02-09)
[65] Strategy Analytics Insight (2006-01)

3.3.1 Cellular distribution technologies

The sale of 3G-enabled mobile phones reached 14 % in Western Europe in 2005 and Ovum predicts that this number will rise to 90% in 2010[66]. We doubt if it is likely to assume such a high migration in only four years but we agree that the trend is shifting towards the advantage of 3G in comparison with today's mobile phone systems. Currently, *3G-streaming* exists as a service to this growing consumer market and means that the TV/Video clip is viewed immediately as it is downloaded, rather than first saving it in the receiving mobile phone[67]. It is unicast distribution, i.e. not broadcasting, and a point-to-point connection has to be established between the network and the consumer. The mobile network operators encourage the consumer's usage of 3G-streaming in order to drive data traffic in their 3G-networks. We find it logically to assume that an adoption of 3G-services may stimulate the consumer demand for purchasing new 3G-mobile phones and it would be beneficial to Sony Ericsson, since the company has a well-established portfolio of 3G-mobile phones. However, we do not consider 3G-streaming to offer a reasonable TV-like experience due to the foremost perceived low picture quality.

Ericsson among others has therefore developed *Multimedia Broadcast Multicast Service (MBMS)*. MBMS will use the radio and network resources in the 3G-networks more efficient than 3G-streaming and will support 2-3 live TV-channels simultaneously. Trials will be conducted during in 2007 and MBMS is likely to be commercially launched in 2008. Sjödén believes that the mobile network operators are likely to support the MBMS technology, since they will retain their exclusive billing relation with the consumer and will not have to share revenues with broadcasters.[68] However, Strategy Analytics forecasts that the largest mobile phone manufacturers, who control two-thirds of the global mobile phone market, will have limited supply of MBMS enabled phones. In addition, they expect that the MBMS technology is likely to be found in less than 1 % of the total global mobile phone sales in 2007, rising steadily to only 5 % of total in 2010.[69]

3.3.2 Digital terrestrial broadcasting

Digital Video Broadcast-Handheld (DVB-H) is a dedicated terrestrial broadcasting technology that will have superior transmission capacity, compared with 3G-streaming and MBMS. This will result in approximately 25 high-quality TV-channels simultaneously[70]. The distribution technology is likely to be globally launched earliest in 2008 and 2009 but mobile TV/Video services with DVB-H technology are already being piloted worldwide[71] and in Sweden, Teracom in collaboration with Nokia are piloting DVB-H[72]. DVB-H will also experience strong support from the Mobile DTV Alliance, with member companies such as Nokia, Motorola, Microsoft, Intel and Texas Instruments.[73] As seen in Table 3:3, Strategy Analytics concludes that DVB-H is the current favourite to become the standard solution in most parts of the world. However, there is a concern with DVB-H broadcast and frequency permissions foremost in Europe until all the countries have shifted to digital television, thus making the progress slow until 2008-2010[74].

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[66] Ovum (2006-02)
[67] Tedenvall M. (Interview, 2006-02-07)
[68] Sjödén P. (Interview, 2006-02-20)
[69] Strategy Analytics Insight (2006-01)
[70] ETSI (1997)
[71] Stare E. (Interview, 2006-02-21)
[72] Lindahl I. (Interview, 2006-02-21)
[73] www.nokia.com
[74] Strategy Analytics Insight (2006-01)

Region/Technology	MBMS	DVB-H	DMB-T/ DAB	MediaFLO
North America		X		X
South America		X		X
Western Europe	X	X	X	
Central and Eastern Europe	X	X	X	
Africa and Middle East		X	X	
China		X	X	
Asia Pacific		X	X	X

Table 3:3 *Expected mobile TV/Video strongholds by region*

Ranged against DVB-H is the competing *Digital Media Broadcasting-Terrestrial (DMB-T)* standard, which does not suffer from the broadcast and frequency permission problems due to its technical origin[75]. Originally developed in Korea, DMB-T is based on the *Digital Audio Broadcasting (DAB)* standard, but can deliver video, pictures and data alongside audio.[76] DMB-T is more market-ready than DVB-H and will find a small window of opportunity in Western Europe and Central and Eastern Europe in 2006 to 2008. This is due to the high uncertainty around frequency permissions for DVB-H but the lacking support from many leading mobile network operators, broadcasters and mobile phone manufacturers, promoting DMB-T, is probable to hold back global success. Samsung and LG support DMB-T making it likely to assume that the distribution technology therefore will have a stronger footprint in Asia Pacific and China, as indicated in Table 3:3.[77]

MediaFLO is another competing broadcast technology developed by the US company Qualcomm and is advocated among others by the second largest mobile phone manufacturer Motorola and one of the US's largest mobile network operators, Verizon Wireless[78]. As seen in Table 3:3, the support outside the US and from other mobile phone manufacturers is fairly low. Thus, we do not believe Sony Ericsson will provide MediaFLO enabled phones since it will be more of a domestic distribution technology, and Sony Ericsson is not a dominant actor in the US market.

Key point #3
Companies should be able to handle a fragmented consumer market due to uncertainties regarding market acceptance of technological development.

3.4 The mobile TV/Video value chain

In this section we present an in-depth examination of the value chain needed to deliver mobile TV/Video with illustrative exhibits. The two main distribution categories, i.e. cellular broadcasting and digital terrestrial broadcasting, were discussed in the previous section, and an implication is that they are likely to have different value chains. Figure 3:2 is illustrating a value chain using the 3G-network to deliver mobile TV/Video. This kind of value chain is rather simple organised and the mobile network operator directs the content through the chain, which enables control for the mobile network operator regarding content and business models. The content aggregator, additionally presented in Exhibit 2, bundles and integrates the content into complete solutions, which are branded and sold to the mobile network operators.

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[75] Yankee Group (2005-07)
[76] www.mobiletv-news.com
[77] Strategy Analytics Insight (2006-01)
[78] www.mobiletv-news.com

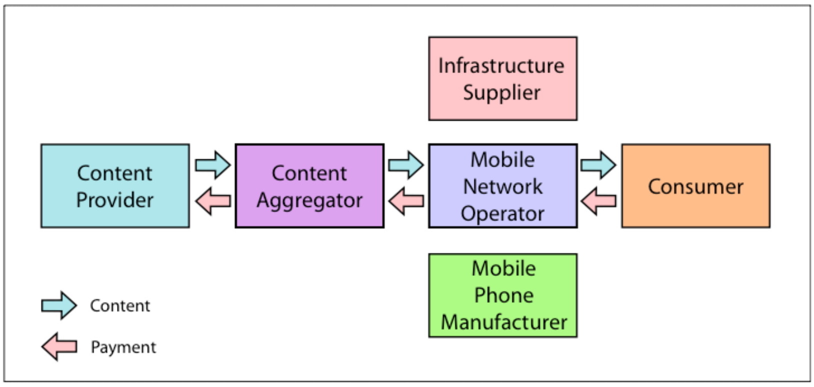
Infrastructure Supplier
Content Provider
Content Aggregator
Mobile Network Operator
Consumer
Mobile Phone Manufacturer
Content
Payment

Figure 3:2 *Mobile TV/Video using cellular broadcasting*

When introducing digital terrestrial broadcasting, new companies are likely to enter the mobile TV/Video market. Traditional TV-broadcasters may enter the market and offer the consumer mobile TV/Video, but it is uncertain if they will cooperate or compete with mobile network operators. However, the broadcast technology will only be able to offer a one-way communication with the consumer. In order to provide voting, chatting and mobile payment, the mobile network operators and their telecommunication systems must be embedded in some way or another. Cronström states that the mobile network operators instead are likely to focus on being a back-channel thereby enabling interactive services[79], as illustrated in Figure 3:3.

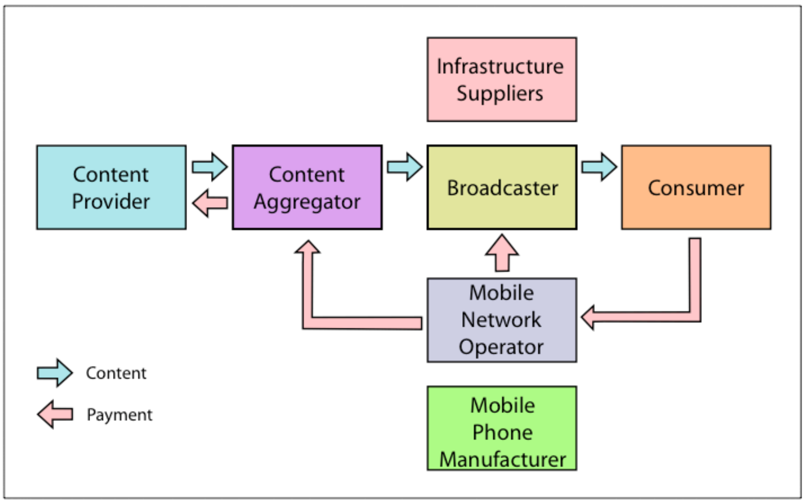
Infrastructure Suppliers
Content Provider
Content Aggregator
Broadcaster
Consumer
Mobile Network Operator
Mobile Phone Manufacturer
Content
Payment

Figure 3:3 *Mobile TV/Video using digital terrestrial broadcasting*

We have also observed that the mobile network operators might collaborate with broadcast companies regarding mobile TV/Video services. As an example, Vodafone has partnered with Sky to provide mobile TV/Video to its 3G-consumer base[80]. However, if mobile network operators and broadcasters collaborate regarding mobile TV/Video, we think it is important for Sony Ericsson to recognise the strengthened bargain power of this newly established customer.

Next, we will examine the different participating categories in the value chains presented in Figure 3:2 and Figure 3:3.

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[79] Cronström D. (Interview, 2006-02-25)
[80] Strategy Analytics Insight (2005-11)

3.4.1 Content providers

We define a content provider to be a company that produces media content in various forms, such as video, audio, picture and games. Content providers are TV-networks, media production companies, record labels and game studios and they own the property rights to distribute and commercialize the content. Examples are Warner Brothers, Sky, Disney, IME and Universal Studios among many others and next we will present in-depth exploitation of the Swedish television channel TV4 regarding the company's view of mobile TV/Video.

Exhibit #1 – TV4

TV4 is one of the largest TV-channels in Sweden and generated revenues of 2.6 SEK billions in 2005. According to Andreasson, Head of Planning at TV4, they are cooperating with Telia Sonera and Three to provide video clips of TV4's news from Telia Sonera's and Three's mobile portals by using 3G-streaming. Currently, TV4 is not keen on offering mobile TV/Video broadcasting but, according to Andreasson, the company conducts discussions with mobile network operators and this view is shared by another Swedish TV-channel, Kanal5[81]. TV4 is confident that they do not need to take the first step and Andreasson continuous to stress that a great concern when discussing mobile TV/Video is the financial agreement between TV4 and the mobile network operators. He prefers a subscription-based solution, where the consumer pays a flat-fee per month in order to consume the service. TV4 will most likely claim 50 % of the revenues generated and charged by the mobile network operator. Furthermore, it will not demand significant efforts for TV4 to begin broadcasting its content to mobile phones due to TV4's license agreements, which states that TV4 has the right to broadcast the content to all TV-receivers. A mobile phone with a built-in TV-receiver has the same legal status as a regular TV, and this implies that TV4 has the right to broadcast directly to mobile phones without having to re-negotiate the broadcasting deals with external content providers. As a consequence, TV4 prefers digital terrestrial broadcasting technologies, such as DVB-H, due to their existing legal broadcasting agreements. However, he is certain that TV4's content will be distributed with both cellular and digital terrestrial broadcasting in the future due to the different characteristics of the technologies. Andreasson also concerns that broadcasters, such as the Swedish company Teracom, only should be responsible for the digital terrestrial broadcasting networks. He questions whether they should be allowed to have more influence in broadcasting mobile TV/Video than they currently possess in regular terrestrial digital TV-broadcasting. Instead, Andreasson believes that the role as an owner and seller of the access to broadcasting mobile TV/Video should be appointed to the mobile network operators, since it would be a more natural solution due to their existing billing relationship with the consumer.[82]

3.4.2 Content aggregators

We define a content aggregator as a provider of telecommunication services and applications. They offer a wide range of different products, such as consumer entertainment, interactive telecommunication services, transmission of data packets via telecommunication networks, provision of payment via telephone bills and voice-based telephone services. Nevertheless, the content aggregator acts as a supplier of white label solutions and is therefore predominantly active for other companies, i.e. the company develops and distributes its own products to customers, using the trademark of its partners. These partners are content providers, mobile network operators, web portals, media companies and consumer brands among others and next the German company Net-M will be presented.

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[81] Davidsson, A. (Interview, 2006-02-22)

[82] Andreasson M. (Interview, 2006-02-21)

Exhibit #2 – Net-M

Net-M is a German content aggregator company specialised in mobile business processing and generated revenues of 301 SEK million in 2005. Net-M offers entertainment products for the consumer, such as graphic logos, ring tones, games, screensavers and pre-recorded messages for answering machines. According to Dornhoff, Technical Director at Net-M, the company also offers interactive telecommunication services, such as mobile lotteries, chats, and surveys to the consumers by SMS/MMS. The cost of content is billed using the company's premium-SMS services, i.e. payment through SMS via the consumer's mobile phone bill. In order to bring the multimedia content to the market, Net-M deals directly with the content providers and aggregates the content and develops complete content stores. These are then sold to the mobile network operators and re-branded with their trademarks. Furthermore, Dornhoff is certain that mobile TV/Video will be a success, but stresses that there are some important factors that should be recognised such as the importance of premium content and branded content. Examples are content from well-known media brands such as Eurosport, MTV and BBC News that are easier to sell to consumers rather than the mobile network operators' own news and music services. A flat-rate payment method should be used since the consumption will be stimulated if the consumer knows that the cost never will exceed the monthly fee. In addition, Dornhoff observes the importance of the mobile network operators to decrease their control over the value chain, and create win-win solutions in collaboration with content providers and aggregators using DVB-H to distribute the mobile TV/Video service.[83]

3.4.3 Mobile network operators

We define a mobile network operator as a company that owns and operates a cellular network enabling mobile phone voice calling as well as data services such as video calling, SMS, MMS and e-mail. The revenues from voice calling accounted for 83 % of total revenues for the mobile network operators in Western Europe in 2004 but are declining and estimations predict a fall with 12 % globally in 2006. There are also uncertainties if new data services, such as mobile TV/video and e-mail traffic, will generate sufficient revenues to compensate that revenue loss from voice calling.[84] In addition to revenue losses, the mobile network operators have, foremost in some countries in Europe, made enormous investments in new 3G-networks. As an example, in the UK five mobile network operators spent a total of 300 SEK billion on 3G-licences alone. In addition to the cost of 3G-lisences, the mobile network operators are also governmentally regulated and obliged to build 3G-networks with a capacity of covering a very high percentage of the country. [85] Thus, we observe that the mobile network operators are in great need of returns on their investments and new revenue generating services, such as mobile TV/Video.

Currently, mobile network operators worldwide are providing services using 3G-streaming that is similar to what we define as mobile TV/Video. We have examined Vodafone, Verizon Wireless, SK Telecom and the Swedish company Telia Sonera. The UK-based Vodafone is the world's largest mobile network operator (in terms of revenues) with total revenues of 455 SEK billion in 2005 and 155 million subscribers[86]. In order to offer mobile TV/Video trough their existing 3G-network, Vodafone has teamed up with the British media company Sky. However, only 1.5 %, or around 2 million, of Vodafone's subscribers in 2005 owned a 3G-mobile phone needed for the mobile TV/Video service. Vodafone will not introduce the DVB-H technology until the market grows and the demand for bandwidth increases.[87] Verizon Wireless is one of the largest mobile network operators in North America with total revenues of 246 SEK billion in 2005 and 51 million subscribers. The company is well known for introducing new services early, and is currently offering a 3G-streaming service, called V-Cast.[88] In addition to V-Cast, Verizon together with Qualcomm are collaborating to introduce mobile TV/Video to the market in 2006 using the digital terrestrial broadcasting technology MediaFLO[89]. Finally, South Korean SK Telecom generated revenues of 102 SEK billion in 2005 and has a dominant position in the highly evolved Korean telecommunication market with a market share of 51 % or equivalently 19 million subscribers. The company positions itself as a first mover in launching new high-technological solutions and is currently offering mobile TV/Video using the DMB-S satellite distribution technology.[90] Figure 3:4 is illustrating the difference in generated revenues between the discussed mobile network operators and is also comparing the revenues with other leading companies in the telecommunication industry. In Sweden, Telia Sonera is the largest mobile network operator and next the company's view of mobile TV/Video will be presented.

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[83] Dornhoff C. (Interview, 2006-03-10)

[84] Ovum (2005-03)

[85] Strategy Analytics Insights (2006-01)

[86] Vodafone Annual Report 2005

[87] www.mobiletv.nokia.com

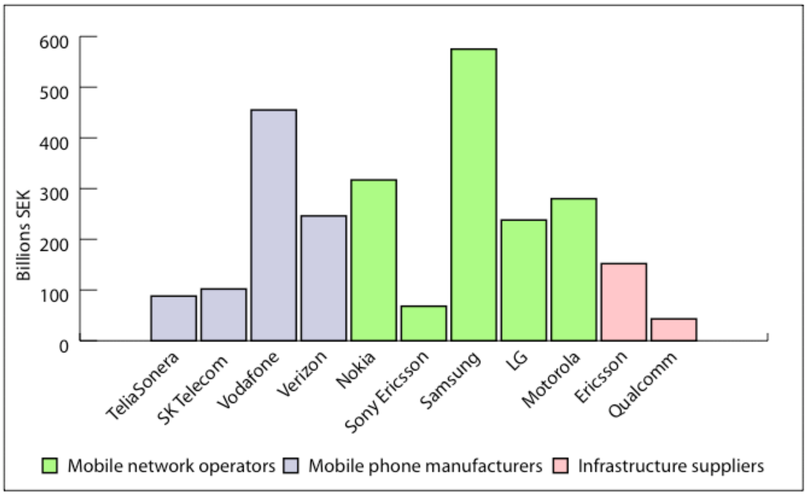

Figure 3:4 *Revenues in the telecommunication industry in 2005*

Exhibit #3 – Telia Sonera

Telia Sonera generated revenues of 88 SEK billion in 2005 and with its 13 million subscribers, the merged Swedish-Finnish company dominates the Nordic and Baltic region. Telia Sonera supply fixed and mobile telecommunications, services broadband access and digital TV. However, the fixed and mobile telecommunications business area accounts for 76% of total revenues and has suffered from decreasing margins with declining rates on voice services.[91] The company expect that the rates will continue to decline in 2006 and as a way to generate new revenues the company currently is offering mobile TV/Video service using 3G-streaming. The service includes video clips from Swedish TV-channels such as SVT, TV4, The Voice and Star and no additional cost to access the material besides a variable data traffic cost. Telia Sonera does not offer a subscription of a fixed number of channels or video clips for a monthly fee, but the company states that the maximum fee for data traffic when using 3G-streaming is 9 SEK per day.[92] Telia Sonera is also preparing for digital terrestrial broadcasting and has both conducted DVB-H trials and filed for a broadcast permission in Helsinki, Finland. If the trials are regarded as successful and the broadcast permission approved in Finland, it is very likely that Telia Sonera will use the DVB-H solution in all its markets, i.e. the Nordic and Baltic countries, in order to gain economies of scale. However, Telia Sonera must apply for a broadcast permission in every country they will implement the service in. The company does not consider MBMS since the numbers of possible channels with the cellular broadcasting are too few according to their consumer trials.[93]

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[88] Verizon Annual Report 2005
[89] www.mobiletechnews.com
[90] SK Telecom Annual Report 2005
[91] Telia Sonera Annual Report 2005
[92] www.telia.se

3.4.4 Broadcasters

We define a broadcaster as a company that owns and operates a TV-network. The broadcaster builds and maintains the needed infrastructure and TV-channels purchases access to the broadcast service. However, the broadcasters do not produce content by themselves, they are only offering the technical platform needed to broadcast the content and next will the Swedish company Teracom be examined.

Exhibit #4 – Teracom

Teracom is a Swedish government controlled company that generated 2.7 SEK billions in 2005 and manages the digital terrestrial broadcasting network in Sweden. In addition to manage the digital terrestrial broadcasting network, Teracom controls Boxer, which is a provider of digital terrestrial TV-services. Boxer sells set-top boxes and subscriptions of TV-channels. Currently, Teracom is also conducting trials with DVB-H transmissions in Stockholm, Sweden and has built a trial network with Nokia, who also provides DVB-H enabled mobile phones to the trial. A total of 500 persons will use and evaluate the service. If, or when, DVB-H networks will be built in Sweden, Teracom will, according to Lindahl, be the most likely company to build this network and then sell the access to the mobile network operators or other companies. Nevertheless, in order to broadcast TV to the public in Sweden, broadcasting and frequency permissions are needed from the Post and Telecommunications Board. Lindahl explains that when digital terrestrial distribution for regular TV was introduced in Sweden, 34 companies filed for frequency permission, but only three companies were awarded permission. These permissions are, also according Lindahl, one of the most difficult challenges to overcome with mobile TV/Video since very few companies, who file for permission receives it.[94]

3.4.5 Infrastructure suppliers

We define an infrastructure supplier as a company that develops and sells telecommunication network equipment such as radio base stations, switches, routers and cable systems and develop as well as market new technologies and applications. The mobile network operators are among the infrastructure suppliers' largest customers and, hence, push technologies and solutions adapted to the mobile network operators' business need. By developing mobile TV/Video services using the existing 3G-networks, i.e. MBMS, and/or DVB-H broadcasting, the infrastructure suppliers will present the equipment needed to upgrade and launch the services and this in turn could offer new services to the consumer generating new revenues. Next, both the infrastructure supplier Ericsson and Nokia will be presented since the companies advocate different technical solutions to deliver mobile TV/Video.

Exhibit #5 – Ericsson and Nokia

Ericsson generated revenues of 152 SEK billion in 2005 and is a provider of telecommunication equipment and related services to both mobile and fixed network operators. The Swedish company is the market-leader in the mobile network area with a market share of 30 %[95]. In 2005, Ericsson co-launched an interactive mobile-TV service with the Norwegian media company NRK. The interactive service is an end-to-end solution and allows the consumer to view live-TV by using an enhanced version of 3G-streaming. The viewer could at the same time interact with the show and, as an example, vote for the next song or send greetings.[96] Ericsson has also co-developed and pushes the MBMS distribution technology that upgrades the 3G-networks in order to offer a cellular broadcasting mobile

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[93] www.nyteknik.se

[94] Lindahl I. (Interview, 2006-02-22)

[95] Ericsson Annual Report 2005

[96] www.ericsson.com

TV/Video service. According to Sjödén, the company are focusing on cellular distribution technologies rather than digital terrestrial broadcasting but if Ericsson's customers demand, for example DVB-H, Ericsson will supply them with solutions enabling both cellular and digital terrestrial broadcasting.[97]

The second largest infrastructure supplier is *Nokia* who generated revenues of 317 SEK billion in 2005 but has, as an infrastructure supplier, a smaller market share than Ericsson. The company has an active role in the development and marketing of the DVB-H distribution technology and will offer a complete network solution. Nokia also claims that this solution is globally the first DVB-H server platform intended for commercial mobile TV/Video services and Nokia cooperates with companies through the whole value chain. In Nokia's preferred value chain, the mobile network operator will be used as a back-channel to their current data, billing, and voice services. Nokia's current trials are based on a subscription payment. In addition, Nokia is determined that DVB-H will be the most successful distribution technology and offers training, implementation, integration, maintenance and support services to facilitate the offering of a commercial mobile TV/video service to the consumer.[98]

3.4.6 Mobile phone manufacturers

We define a mobile phone manufacturer as a company that design, develop, market and sell mobile phones. The mobile phone industry is experiencing a growing market, from global sales of 409 million in 2001 mobile phones and to forecasted sales of 900 million units in 2006. In the 2010, the estimated sales volume is forecasted to be 1200 million units.[99] A way to increase the sales volume in order to reach and exceed the prediction is by introducing models and functions to trigger the consumer to replace her old mobile phone. The introduction of digital camera and MP3-enabled mobile phones has stimulated sales and the mobile phone manufacturers' anticipate that the development of TV/Video enabled phones will boost sales in the same way. By implement more functions in the mobile phones, a further consequence to the mobile phone manufacturers are the likely raise of average selling price in order to defend decreasing margins.[100] In 2002, the average sales margin was 16 % but has declined to 11 % in 2005. The average selling price was US $150 in 2005 but estimations suggest an average selling price of mobile TV/Video enabled phones to be US $650 in 2006. However, the introduction price will fall and is estimated to US $255 in 2010.[101] Next, all the top five mobile phone manufactures will be explored since they advocate the implementation of different technological solutions to deliver mobile TV/Video.

Exhibit #5 – The top five

The finish company *Nokia* had total sales of 317 SEK billion in 2005 with the mobile phone business division accounting for 193 SEK billion and a global market share of 33.1 % in first quarter of 2006[102]. As Figure 3:5 indicates, Nokia does not have the largest total revenues generated. In order to increase the average mobile phone selling price, Nokia will launch their first commercial DVB-H enabled mobile phone in the second quarter of 2006. Nokia is also conducting several DVB-H trials with mobile network operators and broadcaster in European countries, such as Spain, Switzerland, Germany, the United Kingdom, Italy, France and Finland as well as Sweden.[103]

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[97] Sjödén P. (Interview, 2006-02-21)
[98] www.mobiletv.nokia.com
[99] Ovum (2005-09)
[100] Sandgren J. (Interview, 2006-03-02)
[101] Strategy Analytics Insight (2005-12)
[102] Nokia Annual Report 2005
[103] www.nokia.se/

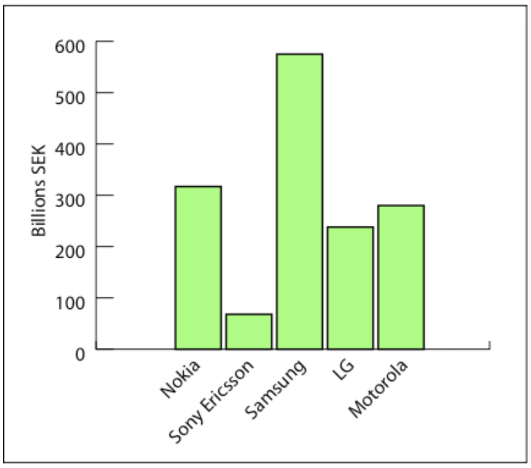

Figure 3:5 *Revenues of the mobile phone manufacturers in 2005*

Motorola generated revenues of 280 SEK billion in 2005 with the mobile phone division accounting for 164 SEK billion and a global market share of 18.6 % in the first quarter of 2006[104]. The company will launch a mobile TV/Video phone using the MediaFLO broadcasting technology but has not announced DVB-H or DMB-T enabled phones yet. However, Motorola has joined the Mobile DTV Alliance, which aims to promote the DVB-H technology in North America and has member companies such as Nokia, Intel, Texas Instruments and Microsoft[105].

The South Korean industrial conglomerate *Samsung* generated revenues of 575 SEK billion in 2005 with the mobile phone division accounting for 188 SEK billion[106] and a global market share of 12.8 % in the first quarter of 2006[107]. The company positioning itself as a technology innovator and a market leader in introducing new technologies and Samsung presented DMB-T enabled mobile phones some years ago in Korea. In conjunction with the Soccer World Cup 2006 in Germany, the company aims to deliver their DMB-T enabled mobile phones to the European market.[108] Samsung has also announced that they will introduce a dual-mode solution supporting both DMB-T and DVB-H.[109]

Korea-based *LG Electronics* reported total revenues of 238 SEK billion in 2005 with the mobile phone division accounting for 92 SEK billion and a global market share of 6.9 % in the first quarter of 2006. The mobile phone division has grown aggressively, with an annual rate greater than 45 % the last five years and LG Electronics announced a DMB-T enabled mobile phone in November 2004.[110] The company also plans to release DMB-T enabled mobile phones to the European market at the Soccer World Cup 2006[111]. In addition, at the Consumer Electronics Show in Las Vegas 2006, LG Electronics declared that they will offer mobile phones supporting the majority of broadcasting technologies, such as DMB-T, DVB-H and Media FLO[112].

The Swedish-Japanese company *Sony Ericsson* generated revenues of 68 SEK billion in 2005 with a global market share of 5.9 % in the first quarter of 2006[113]. The company has not yet announced a mobile phone with a digital terrestrial broadcasting technology, i.e. such as DVB-H and DMB-T, but their existing mobile phones are capable of showing a mobile TV/Video service using 3G-streaming. Nevertheless, Sony Ericsson is currently cooperating with the Swedish broadcasting company Teracom in DVB-H trials in Sweden[114]. In February 2006, Sony Ericsson and Nokia also declared that they will cooperate in developing a standard for interoperability regarding DVB-H[115] meaning that mobile phones from Sony Ericsson will work properly with network equipment from Nokia and vice versa.

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[104] Motorola Annual Report 2005
[105] www.designtechnica.com
[106] Samsung Annual Report 2005
[107] Strategy Analytics Insight (2006-04)
[108] times.hankooki.com
[109] www.eetasia.com
[110] LG Electronics Annual Report 2005
[111] www.phoneworld.com
[112] www.mobilementalism.com
[113] Ericsson Annual Report 2005

3.4.7 Summary of value chain observations

By conducting the in-depth research in the previous section regarding the various participating categories in the mobile TV/Video value chains, we can now introduce a more complete representation. Our observations are presented in Figure 3:6 and Figure 3:7 and clarifies how the different participants interact with each other using cellular or digital terrestrial broadcasting.

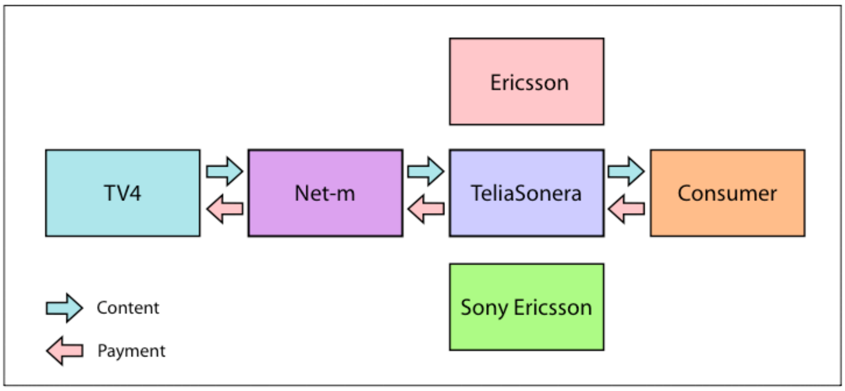

Figure 3:6 *Detailed value chain using cellular broadcasting*

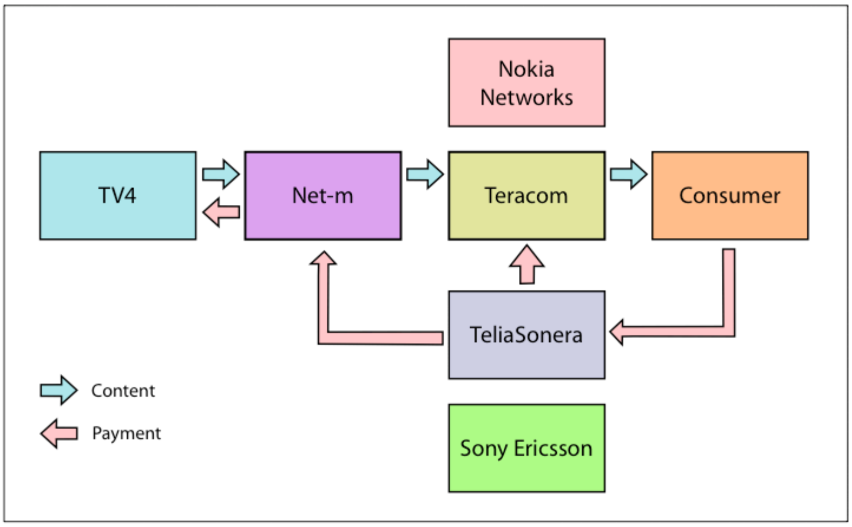

Figure 3:7 *Detailed value chain using digital terrestrial broadcasting*

To sum up, our observations about the different value chains also include:

- The content providers are interested in distributing TV/Video content to new technological platforms, but they are probably not willing to take the first step and invest in new infrastructure. Content is essential when it comes to mobile TV/Video, which presents the content providers with a strong bargaining position.

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[114] www.mkf.se
[115] www.nokia.se

- The content aggregators package and integrate the content into software and technological solutions but will not have a dominant position in the value chain. The content aggregators are certain that mobile TV/Video will be a success, and that DVB-H will be the preferred technology.

- The mobile network operators have a well-established relationship with the consumer, and will most likely handle the billing of the mobile TV/Video services. The mobile network operators are also experiencing decreasing rates on voice calls and are in need of new successful services since the launch of 3G-networks has not been as profitable as expected.

- The infrastructure suppliers are technology-driven and develop new solutions and services to its customers, the mobile network operators. Ericsson pushes the MBMS technology that uses the 3G-networks while Nokia advocates DVB-H and has introduced a complete DVB-H solution.

- The mobile phone manufacturers are experiencing decreasing selling prices due to the intense competition, and by offering mobile TV/Video enabled phones, they have the possibility to sell more high-end products with higher margins. All top five manufacturers have announced mobile TV/Video enabled phones besides Sony Ericsson.

Key point #4
Companies engaged in value chains may use strategic alliances in order to experience market leverage and flexibility, especially smaller companies may benefit from such constellations.

3.5 The future of mobile TV/Video

The consumer interest for entertainment and mobile TV/Video is increasing but there still exist numerous barriers to success to prevail before the service can approach mass-market status[116]. One such barrier is the long-term suitability of 3G-networks to deliver mobile TV/Video. 3G-networks needs to establish a point-to-point transmission prior to each individual consumer viewing and is, due to this, simply too inefficient in high-demand conditions[117]. Estimations suggest that a maximum of 2-3 minutes of 3G-streaming is possible due to technical constraints. Beyond 5 minutes there will be a need for enhanced technical solutions, which include an upgrade of the existing 3G-network or building a new digital terrestrial broadcasting network.[118] Sjödén believes that the best solution for the mobile network operators' is to upgrade their existing 3G-networks first with HSDPA, i.e. high-speed 3G, and then with MBMS technology provided by Ericsson[119]. On the other hand, Lindahl expresses a strong conviction in building dedicated mobile TV/Video networks based on the DVB-H technology[120]. We conclude that anyone of the upgrades results in greater transmission capacity enabling large groups of consumers to receive mobile TV/Video transmission simultaneously. However, when interviewing these company representatives from the telecommunications industry, we observed that neither of them talked about *the consumer* demand and requirements. We advocate remembering that the consumer perspective must not be forgotten when developing mobile TV/Video services.

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[116] Strategy Analytics Insight (2005-12)
[117] Ovum (2005-12)
[118] Strategy Analytics Insight (2004-03)
[119] Sjödén P. (Interview, 2006-02-21)
[120] Lindahl I. (Interview, 2006-02-22)

Steiber, Vice President at Xlent Strategy, believes that the greatest challenge to overcome is the potential standard war rising between the different distributions technologies. Today, mobile TV/Video services distributed by digital terrestrial broadcasting are in commercial operation only in South Korea and Japan but trials are being conducted worldwide. The technological distribution solutions are DVB-H, greatly supported by Nokia, MediaFLO with support from Qualcomm and DAB with support from British Telecom and Virgin. In addition, Japan uses ISDB-T, South Korea DMB-S and later this year, Ericsson will launch their first trials with MBMS.[121] We should clarify that these distribution technologies still are in a trial stage but we do recognise a greater support for the DVB-H technology but even so, Steiber further stresses that the various number of distribution technologies could initially delay the mobile network operators' introduction of mobile TV/Video. This could hinder revenue generation for all the participants in the value chain delivering the mobile TV/Video service.[122] However, we have observed that if the mobile network operators' upgrade their 3G-networks, i.e. with HSDPA and MBMS, they do not have to invest in new expensive network infrastructure or partner with someone else who has it. This also implies that the mobile network operators could influence the consumer to a larger extend than if they have to split the consumer revenues with a third part demanding revenue sharing. This is foremost due to the fact that the mobile network operators have a well-established billing relation to its consumers and is already today delivering mobile phone services.[123] Hence, we conclude that today there seems to be a lack of clarity in the business model between the participants potentially delivering mobile TV/Video services.

Nilsson also stresses that the mobile network operators should invite the content providers and give up some of their control over the value chain. Traditionally there have been, and still is, boundaries between the media and telecommunication industry and Nilsson believes there is a great need of creative companies possessing both a good technical solution and appealing content.[124] One of the mistakes regarding the launch of 3G is the lack of interesting content and the mobile network operators need to have this in mind when developing mobile TV/Video. In addition, mobile phone constraints also exist regarding cost, size, weight and battery consumption and these will be barriers to adoption for the manufacturers of mobile TV/Video enabled phones. Increased display dimensions, improved speaker quality and higher memory capacity will add significantly to the bill of materials potentially leading to higher consumer price.[125] We would like to stress the importance for Sony Ericsson and other mobile phone manufacturers to understand and fulfilling these requirements. Sony Ericsson should realise that this is the only part of the value chain where they have the opportunity to promote mobile TV/Video services.

To sum up, a successful future of mobile TV/Video depends on the following aspect:

- A potential standard war rising between different distributions technologies such as DVB-H, MediaFLO and DMB.

- Lack of clarity over the business model, will it be dominated by mobile network operators, broadcasters or in partnership?
- Mobile phone constraints such as cost, size, weight and battery consumption of the mobile phone.

- The mobile network operators should accept a less dominate position in the mobile TV/Video value chain

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[121] Steiber R. (Interview, 2006-03-08)
[122] Ny Teknik, 2006-03-08
[123] Ovum (2005-12)
[124] Nilsson M. (Interview, 2006-02-22)
[125] Strategy Analytics Insight (2006-01)

3.6 Theoretical reflections

Our empirical findings conclude that the telecommunication and media industry tend to converge when the functions and services, such as mobile TV/Video, implemented in the mobile phones become more advanced and media savvy. Hence, the companies in the telecommunication industry should consider and cooperate with other industries when developing new services. Therefore, we therefore highlight the importance of handling *uncertainty* as well as understanding the *maturity* and *characteristics* of the company's own and contiguous industries. This implies that companies in the telecommunications industry should take competitors and continuous industries in consideration to a greater extent than before in order to strengthen their ability of positioning. We further suggest that a company's position in the mobile TV/Video value chain can affect the bargaining power when establishing the new business model and thus chances of receiving shares of the revenues. A company's role in the mobile TV/Video value chain is also likely to affect the possibility to share the generated revenues. A content provider and a mobile phone manufacturer have different roles and compete for different parts of the revenue stream. Therefore, we must question how a well-functional business model for all the involved participants could be designed – and who will receive the largest share of the revenues?

We have also observed that when video calling was introduced, the telecommunication industry were convinced that this service would be a success and drive the usage and sale of 3G-enabled mobile phones. However, this has not been the case and, according to us, the media and telecommunication industry should have this in mind when launching mobile TV/Video. Market research is imperative in order to capture the requirements of potential customers. Questions essential to examine is the cost of the service and the subscription model, i.e. flat-rate or variable rate, as well as the number of included channels, size and cost of the TV enabled mobile phone. When pioneering the market, the uncertainties regarding these questions tend to be greater and the pioneering company may experience greater risks compared to a company that follow the pioneer. However, it might not be risk-free to enter the market at a later time, since the market could be locked-in by the pioneering companies or be dense due to many entrants and therefore we recommend the companies to understand the product's *strategic window*.

In addition, technological development has resulted in several different competing distribution technologies enabling the mobile TV/Video service. The two main technologies discussed in our thesis are MBMS and DVB-H and since both compete in becoming a standard solution this could potentially result in a standard war. However, mobile TV/Video already exists through 3G-streaming and an upgrade to MBMS demands less capital investments compared with DVB-H. DVB-H will be introduced earliest in 2008 but is more suited for simultaneously delivering mobile TV/Video to a larger number of consumers and demands new broadcast networks and thus new and substantial capital investments. We believe that companies should understand and be able to handle how they are affected by *technological disorders* in order not to loose competitive advantages in their industry. Finally, the three largest mobile phone manufacturers, with a combined market share exceeding 60%, support more or less DVB-H, and among the top five manufacturers, Sony Ericsson is the only company that has not yet announced a mobile TV/Video enabled phone. DVB-H is also supported by the Mobile DTV Alliance, with members such as Nokia, Motorola, Microsoft, Intel, and Texas Instruments. Thus, we argue that this distribution technology may prevail and therefore the company should understand and implement strategic *planning* and *thinking* in order to learn from earlier product launches. Also strategic *positioning* and *flexibility* should be acknowledged and we believe this to be especially important for smaller company acting in this highly complex business landscape.

Summarising our theoretical reflection, we conclude that important industry parameters, such as uncertainty, maturity, characteristics and technological disorder as well as the company's strategic window, carefully should be examined and discussed. We furthermore conclude the importance of using a strategic toolbox with tools such as strategic planning, thinking and positioning as well as flexibility. Finally, our findings also raise questions regarding how technological development affect a company's strategic possibilities and value chain positioning. We will next conduct a theoretical examination in order to gain a better understanding of the questions raised thereby enabling successful navigation in the highly complex business landscape of mobile TV/Video.

4 Theoretical findings

In this chapter we discuss the important industry parameters, identified in the empirical findings, and what implications they have to the pioneering or following company. The outcome of this discussion composes a respectable foundation for the company to appreciate its strategic toolbox. What tools to include in this box, were also identified by us in our empirical findings, and as a result we recognise the significance for the company to implement strategic planning, thinking and positioning. By implementing the tools, we also consider it enables the company to encourage strategic flexibility in order to improve exploitation of its business environment. However, we have also understood that reality is far more complicated and a new hypercomplex business landscape has emerged that should be characterised and defined to enable successful navigation.

4.1 Important industry parameters

We believe that the path for a company's profitable growth is laden with both opportunities and danger. The opportunities will, among other reasons, be likely to arise from technological development enabling potential strategic advantages to the fortunate company. However, according to us, the important question raised is how technological development affects a company's strategic possibilities and value chain positioning. With our extensive empirical findings, we have clarified that the question involves different complex industry parameters, such as uncertainty, maturity, characteristics and technological disorder as well as the company's strategic window, which carefully should be examined and discussed.

4.1.1 The pioneering company

Our first parameter is discussed by Heracleous when he states that *uncertainty* and risk are endemic in strategic management. According to him, the variables cannot be eliminated, but at least they can be monitored and managed. Uncertainty can range from low levels, in relatively stable, transparent, and sedate environments, to extreme ambiguity where key features such as the companies, technological standards, consumer demand, and institutional direction are as yet undefined, and environmental movements are impossible to predict.[126] Nevertheless, even with these fluctuating levels of ambiguity, Harrigan points out the importance of conducting uncertainty analysis to discover what affects the company's conditions for success[127]. The result is persistent with Heracleous' view and he addresses that within these uncertainty levels, various companies are likely to adapt to the competitive situation and take reactive measures, an active "wait-and-see" attitude. They make relatively small investments that can grant them the "right to play" when the competitive situation becomes more patterned and predictable. However, some companies are instead likely to attempt to "re-shape" their industry and change the rules of their competitive game, even if such a task seems next to impossible given the current resources.[128] If anything, Heracleous concludes, even with high levels of uncertainty, successful companies are those that reinvent their industries and create new pies, rather than keep fighting for incremental slices of existing shrinking pies[129].

Styles continuous Heracleous interpretation but is instead more focused on our second parameter with a convincing statement about how managers refer to their industry's *maturity* as reason for declining margins and slowing growth. This tendency is perhaps at its most extreme in the automobile, telecommunication, financial service and airline market industries. However, in each of these industries standout examples are found, such as DELL and Southwest Airlines. Styles pursues that these standouts are companies that have broken out of their industry's strategic convergence and are doing something genuinely different that the consumer like and award.[130] We question why not more companies manage to conduct such a break out and the answer, according to Porter, is that most compete in industries with a set of players that essentially follow the same strategy. They compete by trying to outperform each other in areas of implementation, by being better at the same game, i.e. operational effectiveness. These companies see the world the same way and make the same assumptions about how to compete.[131]

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[126] Heracleous L. (2003)
[127] Harrigan K.R. (1998)
[128] Heracleous L. (2003)
[129] Ibid

Grant clarifies our third parameters when he states that there are few industries that have seen as much influence by technological *characteristics,* as has the telecommunication industry over the past five years[132]. Hitt et al[133] and Harrigan[134] also confirms the importance of our third parameter when describing how new communication technologies are forcing television, telecommunications and utility companies to compete and how these may eventually blend into one a technology intensive mega-industry. Grant defines technology intensive industries to include both emerging industries, those in the introductory and growth phase of their life cycle, as well as long-established industries, such as telecommunications and semiconductors. In these industries, the technology continues to be the major driving force of competition.[135] However, Kotler suggests that as the market matures in these industries, generally the competition increases and the price of the product decreases. To be able to keep up sales and to fight the competition, companies are likely to invest in product development in order to launch new product features or completely new products. In addition, the product life cycle in mature markets is becoming shorter and shorter to please the more demanding consumers.[136] Thus, Porter is convinced that companies are forced to sustain a high product development pace and cut costs in order to be part of the competitive game, but the company must make a strategic choice whether to compete with a differentiation advantage or with a cost advantage[137]. Nevertheless, according to D'Aveni, truly highly competitive companies will always find ways to eliminate tradeoffs and he illuminates that tradeoffs exists only if the companies believe that tradeoffs are necessities and stop looking for ways to do both alternatives[138]. We consequently observe that competition in technology-intensive industries is complex but conclude all in all that companies should try to pioneering the market and that they cannot, in most cases, afford to be a follower due to the increasing industry pace.

Unfortunately, piecemeal, incremental change will not be sufficient to ensure survival, let alone competitive success, if a company is getting more and more out of touch with what is happening in its environment. According to Heracleous, this could potentially create a lethal gap known as 'strategic drift' and when the drift widens, unless the company can change radically to get back in touch with its environment, it risks destruction. Often companies that get out of touch with their environment have been pursuing effectively a particular strategy that initially leads the company to competitive success, e.g. engineering excellence, shrewd diversifications, focus on innovation or marketing savvy. Heracleous states that this strategy, however, can soon dominate the company and blind the managers to other important issues such as cost control, consumer focus, or development of new competencies. In these cases, the company's greatest asset and source of success can lead to its downfall because it dominates thinking and action at the expense of other important issues.[139] We are convinced that one such pitfall, enabling a potential strategic drift, is when a company constantly tries to be the follower and therefore accordingly lacks the ability to be pioneering the market. Even if this is the company's intended strategy in order to minimise risks, i.e. first observe actions taken by competitors and then choose its own strategic decisions, we should address that this behaviour by itself is a great risk due to the loss of market contact and first-mover advantages. In this matter, we therefore argue the same line of reasons as Styles and Porter and once again the importance of creating new pies must be illuminated.

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[130] Styles C. (2004)
[131] Porter M.E. (1996)
[132] Grant R.M. (2001)
[133] Hitt M.A., Keats B.W., DeMarie S.M. (1998)
[134] Harrigan K.R. (1988)
[135] Grant R.M. (2001)
[136] Kotler P. (2002)
[137] Porter M.E. (1981)
[138] D'Aveni R.A. (1995)
[139] Heracleous L. (2003)

Wang deeply engross our forth parameter in his investigation about how Taiwanese DRAM (semiconductors) companies take advantage of strategic alliances to choose their optimal investment behaviour when they face a series of *technology disorder*. We find this study relevant since it considers a technology-intensive industry, just like telecommunication. Wang's results suggest that a company should adopt leapfrogging, i.e. a leader, strategy when technology arrives but unfortunately he expresses that the result is totally opposite with what is observed in reality.[140] From an alliance perspective, Harrigan argues the same line of reasoning when stating that the opportunity in some markets are often so short-lives that firms use joint ventures to leapfrog into these growing markets to exploit them before their lustre fades[141].

4.1.2 The following company

Our theoretical examination so far undoubtedly indicates that a pioneering position improves competitive advantage in technologically intensive industries. However, the empirical evidences do not show a clear picture, in some industries the pioneering company has gained a dominant market share while other leaders has succumbed to the risks and costs of pioneering. D'Aveni enforces this statement and suggests that companies usually have themselves to blame. Either they have ignored the threat for too long, giving it time to gather momentum, or they have hyperactively embraced it to quickly thereby wasting their resources and destroying their existing strengths without acquiring new ones.[142] Also Grant has identified the imbalance of power between different pioneering and following companies. Netscape was a first-mover in web-browsers, but today, the follower Microsoft dominates the market. Diamond Multimedia introduced one of the first MP3-players, but Apple currently dominates the market. Nevertheless, in some cases, the leader has kept the dominant position, such as in operating systems for hand-held digital devices introduced by Palm and Symbian. Grant further states that an optimal timing is dependent not only on the characteristics of the technology and the industry, it also depends on the resources and capabilities the company owns, and this is included in our fifth industry parameter. Different companies have different *strategic windows*, that is, periods in time when their resources and capabilities are aligned with the opportunities available in the market. According to Grant, smaller technology-based companies may have no choice but to pioneer the introduction of an emerging technology. Due to the lack of complementary resources, the smaller company's only chance of building sustainable competitive advantage is to grab the first-mover advantage. The company then must try to seize the market and develop complementary resources before larger and more powerful companies enter the market.[143] In addition, Mehra and Seidmann have studied the introduction of new products and have found further pessimistic implications for the smaller company. The results show that when introducing new products it is imperative that new versions will be introduced early in the product's life cycle and that it sometimes might be optimal to integrate its product with complementary products. Thus, according to them, it is optimal to do the first few introductions quickly. Consequently the company should allocate huge amounts of R&D resources during this period.[144]

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[140] Wang Y. (2006)

[141] Harrigan K.R. (1988)

[142] D'Aveni R.A. (2002)

[143] Grant R.M. (2001)

[144] Mehra A., Seidmann A. (2006)

In this first part of our theoretical examination we have been exploring important industry parameters, such as uncertainty, maturity, characteristics and technological disorder as well as the company's strategic window. The discussion regarding the different parameters foremost indicates that it is important to be the pioneering company in its industry. However, companies do not usually have unused resources and we feel us obliged to address that it is difficult for smaller companies to reinvent their market and be absolutely unique in order to seize the market. This is inevitable due to the lack of market access and the fact that it takes substantial amounts of capital and time to establish new brands and products. We conclude that it is hard to both be a smaller company and a pioneer in the market.

4.2 Understanding the strategic toolbox

We are convinced that the company must understand what business it is in and how its own as well as contiguous industries are characterised. This is achieved by analysing the important industry parameters and the outcome composes a respectable foundation for the company to appreciate the strategic toolbox. What tools to include in this box, were also identified by us in our empirical findings, and as a result we recognise the significance for the company to implement strategic planning, thinking and positioning. By implementing the tools, we also consider it enables the company to encourage strategic flexibility in order to improve exploitation of its business environment.

4.2.1 What tools to use

Akter observes our first component of the strategic toolbox when he stresses that companies are likely to gain sustainable competitive advantages in technology-intensive industries by developing *strategic planning*. He continuous to emphasise that strategic planning must be a team effort, since it is only when the team members recognise the conceptual linkages in their common thought process that knowledge will increase and market-responsive decisions will improve.[145] Regardless of how well the awareness of this team effort is, Heracleous acknowledges our second component when he agrees with Akter and states that companies should use *strategic planning* and *thinking*. However, according to him, strategic planning is often used to refer to a programmatic, analytical thought process, and strategic thinking to refer to a creative, divergent thought process.[146] Heracleous also describes that strategic planning can be seen as single-loop learning, which occurs when there is a match between the organisation's design for action and the actual outcome, or when such mismatches are corrected by changing actions, but without critical examination of the governing variables for action. Strategic thinking, on the other hand, can be seen as double-loop learning, which occurs when the correction of mismatches is arrived at by examination and altering the governing variables for action and then the actions themselves. The central concept common to them involves for the company on one hand thinking and acting within a certain set of assumptions, i.e. central standards, and potential action alternatives or on the other hand challenging existing assumptions and action alternatives, potentially leading to new and more appropriate ones.[147] We consider that a company preferably should use both since it is likely to clarify how the company should act in certain situations resulting in considered actions as well as a sound questioning about the implemented decisions.

Yasuda illustrates our third important component of the strategic toolbox when discussing how *strategic positioning* has become central to competitive success in fast changing global markets, such as telecommunication[148]. Porter also concerns strategic positioning when he appreciates the importance of identifying various different strategic choices that the company

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[145] Akter S.H. (2003)

[146] Heracleous L. (2003)

[147] Ibid

[148] Yasuda H. (2004)

should undertake to be successful. First, a company must put superior long-term return on investment as its key goal rather than focus solely on increasing the share price. Secondly, the strategy must be designed to deliver unique and well-defined value propositions to specific sets of consumers, rather than trying to be all things to all people. Thirdly, this value proposition needs to be supported and operationalised in unique configurations of the value chain, not because the company has latched on to an obsession with "best practices" that most other companies are also following and that result in homogenisation and the absence of uniqueness. Fourth, effective strategies necessarily involve trade-offs, though decisions about what not to offer and what customer segments to relinquish, which in turn should be reflected in value chain choices that result in true distinctiveness. The fifth principle is that the strategy should define not only the choices of organisational configuration, but also the levels of fit, coherence, and synergy among the choices. This is what makes a strategy hard to copy by competitors, because they would have to copy the whole business system rather than just parts of it. Attempting to copy a whole business system, however, can involve high risks for competition because several of its elements would come into conflict with their own established processes and strategy. Finally, Porter acknowledges that strategy involves a constant direction in the value proposition that the company should stand for in the longer term.[149]

4.2.2 Exploit the business environment

Hitt et al has identified how the companies' new competitive landscape is driven by the technological revolution, involves significant globalisation and is moving towards great competition. It also includes extreme emphases on price, quality and satisfaction of customer needs and an increasing focus on innovation, both in technology and new services. In this new competitive landscape, firms exist in highly turbulent and chaotic environments that produce disorder, disequilibrium and substantive uncertainty. Hitt et al therefore stress that the perhaps most important attribute that firms should achieve to operate effectively in this new competitive landscape is that of *strategic flexibility*. It is defined as the capability of the firm to proactively respond to changing competitive conditions and thereby develop and/or maintain competitive advantages.[150] Heracleous continues to discuss another important matter of strategic flexibility when he states that networks can be seen as creating resources beyond the company's boundaries, i.e. "network resources". Members have privileged access to these resources that confer cost- or value-based advantages and that are hard to imitate owing to their complexity and path dependence. Furthermore, from the perspective of achieving competitive advantage in particular, networks can been seen as spurring innovation, aiding adaptation to environmental change, increasing flexibility and efficiency, allowing access to critical network resources at low cost and ultimately leading to higher performance.[151]

Gulati strengthen Heracleous view when stating that the most important factor of an organisation's environment is its social network of external contacts. He states that a company's portfolio of alliances and its network position in an industry are likely to have a profound influence on its overall performance. Thus, by examining the specific way in which social networks may constrain the company's future actions and channel opportunities, companies themselves can begin to take a more forward-looking stance in the new ties they enter. They are likely to be proactive in designing their networks and considering the ramifications on their future choices of each new tie they form. They may also selectively position themselves in networks to derive possible control benefits as well.[152] Kogut also suggests that many joint ventures, i.e. a kind of network recourses, occur as option to expand in the future and are interim mechanisms by which firms both buffer and explore uncertainty[153]. However, as Xia et al conclude, it must be the performance of the entire network's ability to meet the consumer needs through product availability and responsive, on-time delivery, which determines the winner[154]. Grant concludes with identifying that the technology of a system that has the largest installed base also attracts the greatest proportion of new buyers because of the benefits of going with the market leader. Conversely, the more a technology is perceived to have a minority of the market, the more new and existing consumers will defect to the market leader resulting in a tendency toward a "winner-takes-all" market.[155] As an additional consequence, we should emphasis the importance of considerate and evaluate the prevailing business models and their implication to the company's strategy. Keen and Qureshi state that strategy follows the business model and is targeted to achieve competitive differentiation. They define a business model as a hypothesis, i.e. a model, of how to generate value in a consumer-driven marketplace and is therefore comprehensible important to everybody in the company.[156]

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[149] Porter M.E. (1996)

[150] Hitt M.A., Keats B.W., DeMarie S.M. (1998)

[151] Heracleous L. (2003)

[152] Gulati R. (1998)

All in all, we conclude that the strategic toolbox provides significant assist to the company and we advocate the implementation of strategic planning, thinking, positioning and encourage strategic flexibility – but is it enough?

4.3 Hypercomplexity

This chapter was introduced by questioning in what way technological development affects the company's strategic possibilities and value chain positioning. To answer the question, we have explored both important industry parameters as well as discussed the significance of understanding and implementing the strategic toolbox. However, we have also realised that the question is far more complex. Hitt et al among many others state that the company's business has entered an age of new realities and we would like to stress that it is essential to the company to understand and take advantage of the dynamic motion of the global markets and technological breakthroughs[157]. Only when this is accomplished will the company be able to navigate in the new landscape with its highly complex business environment.

4.3.1 New conditions of competition

Grant distinctively addresses our question when he states that the important knowledge in technology-intensive industries, where technology is the primary medium of competition, the nurturing and developing of innovation is the fundamental source of competitive advantage and the focus of strategy formulation. An issue with technology-intensive industries is the rapid rate of change and the difficulty of forecasting variations.[158] According to Schumpeter, conditions of "creative destruction" mean that traditional approaches to strategy formulation based on forecasting should be abandoned, due to technological revolution and innovation, in favour of strategic management approaches that combine a clear sense of directions based on vision and mission, with the flexibility to respond to and take advantage of the unexpected[159]. However, Style believes, somewhat unlike Schumpeter, that strategists should identify actions that the company could take in the short-term to move the environment towards a more favoured scenario[160]. This draws on some of the principles of the complexity theory and the "butterfly effect" meaning that a small change in the initial conditions of a system, such as an industry, country or region, can have substantial impact on the end state. The future is not predetermined and, according to Ohlén, we should not look at the environment as fixed.[161]

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[153] Kogut B., Zander U. (2003)
[154] Xia L.X.X., Lee W., Sing C.L., Zhengping L. (2005)
[155] Grant R.M. (2001)
[156] Keen P., Qureshi S. (2006)
[157] Hitt M.A., Keats B.W., DeMarie S.M. (1998)
[158] Grant R.M. (2001)
[159] Henrekson M., Jakobsson U. (2001)
[160] Styles C. (2004)
[161] Ohlén G., Åberg S., Östborn P. (2004)

Gulati also confirms this view from an alliance perspective when discussing that an examination of the extent to which alliances formed by companies may lock them into path-dependent courses of action in the future. However, as he argues, once companies understand the dynamics of alliance networks, they may choose path-creation strategies rather than becoming path-dependent. As a result, they can visualise the desired network structure of alliances in the future and work backwards to define their current alliances strategy.[162] Nevertheless, we do believe that this might be somewhat more difficult to achieve in reality.

D'Aveni continuous our line of reasoning when he states that a fundamental shift in thinking is necessary for coping with the company's new actualities. According to him, companies struggle to sustain their advantages, but in fact, no organisation can build a competitive advantage that is sustainable and every advantage will erode, sooner or later. Schumpeter focused mainly on creative destruction due to technological revolution and innovation but D'Aveni states that 'hypercompetition' support a much richer, multidimensional view of competition. Hypercompetition is a condition of rapidly escalating competition defined as:[163]

> *An environment characterised by intense and rapid competitive moves, in that competitors must move quickly to build advantages and erode the advantages of their rivals. This speeds up the dynamic strategic interactions among competitors.*

Hypercompetition is based on competition in four different arenas. In the arena of *cost and quality*, companies in an industry offer customers different levels of quality at varying prices in an effort to provide value and to be competitive. In the arena of *know-how and timing*, competition occurs along the timing of entry. Each type of move emanates from the resource base that the organisation possesses and provides certain advantages in the marketplace. In the arena of stronghold *protection and invasion*, companies try to insulate themselves from competitive attacks based on price, quality, innovation and imitation by creating entry barriers around a geographic segment, industry or product market. Finally in the arena of *deep pockets*, well-endowed companies use their superior resources to try to crush smaller competitors. Their superior resources offer them greater endurance, broader reach, political power, staying power and a larger margin of error, enabling them to outlast their smaller rivals.[164] In addition, in the hypercompetitive environment the ability to disrupt existing competitive advantages and market structures becomes crucial. A firm must be able to create a continuous series of temporary advantages in any or all of the four arenas of competition, either simultaneously or in succession. Thus, D'Aveni's has developed a 'New 7S's model' based on the three critical factors in order to enjoy success in hypercompetitive markets:[165]

- *Vision for disruption:* Comprises ideas and method for superior stakeholder satisfaction (S1) with strategic soothsaying (S2).

- *Capabilities for disruption:* The importance of market speed (S3) and surprise (S4) in order to successfully disrupting status quo.

- *Tactics for disruption:* Shifting the rules of the game (S5), signalling strategic intent (S6) and simultaneously and sequential thrusts (S7).

D'Aveni proposes that the framework enables the company to analyse itself as well as competitors with regard to the ability to disrupt markets in the future[166]. Nevertheless, Petrick and Echols do not echo D'Aveni's view and state that companies have been exposed too much to several strategies and paradigms that emphasise the need to not attempt to create sustainable innovations, i.e. hypercompetition. Wasted resources, underemployed manpower, and an inability to participate in future opportunities as a consequence of past decisions have not been given the attention needed. Therefore, they suggest that companies should concentrate on choosing the best technology for long-term future returns. Short-term profitability may not be as high as previously deemed acceptable, but long-term benefits may exceed expectations.[167] We conclude that the importance of different strategic perspectives differ among the various authors acting in the field of strategic management. However, we recognise a need to extend D'Aveni's framework to open up new arenas of competition. The view of expanding the 'New 7S's model' is also confirmed by Rühli when stating that the interaction perspective between large global companies has been unacknowledged by D'Aveni's framework[168].

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[162] Gulati R. (1998)
[163] D'Aveni R.A. (1995)
[164] Ilinitch A.Y., D'Aveni R.A., Lewin A.Y. (1996)
[165] Veliyath R., Fitzgerald E. (2000)
[166] D'Aveni R.A. (1995)

4.3.2 The emergence of the hypercomplex business landscape

Grant declares that if the environment of business is complex and unpredictable a chief executive, no matter how experienced or well trained in the art and science of strategic management, is unable to formulate strategy based on a rational, objective analysis of the company and its environment[169]. We must address this challenging idea that the dynamics of business environment might be too complex to be analysed by the human brain. Brown and Eisenhardt have explored the question when they applied the concepts and results of the complexity theory to the problems of strategic management in hypercompetitive environments. They found that to navigate in such an environment, the company needs a framework consisting of a few simple but hard-and-fast rules that define the direction without confining it.[170] We acknowledge this discussion but sense a need to first characterise the new business landscape found in our empirical findings and involving rapid technological change, uncertain future development, intense competition as well as industries converging into a common industry with new competitors or possible partners. Therefore, with our extensive empirical and theoretical findings our thesis has originated to define '*hypercomplexity'* as:

> *A business landscape composed of converging industries that demonstrate intense competition or even conditions of hypercompetition in part of or in the entire value chain of the service or the product. Few technological standards and substantial size variation, in terms of market shares and revenues, between the competing companies also affect the prerequisites. Combined with high uncertainties regarding future consumer market development, the landscape constitutes a hypercomplex business environment.*

We appreciate that D'Aveni's framework for hypercompetitive markets may be useful when developing competitive strategies. However, we do not believe that all of his seven recommendations hold true for successful navigation in the hypercomplex business landscape. Foremost, we cannot recommend D'Aveni's use of positioning for speed (S3) and surprise (S4). When positioning for speed, the company should launch their products at a higher pace in order to outrun their competitors. This strategy may risk harming the company's reputation and consumer satisfaction if the products released are not fully functional and tested. The surprise moment may also be difficult to incorporate in converging industries due to the heavy dependence of several companies in different industries. Furthermore, since we advocate the use of strategic alliances, the surprise strategy may be ruined due to the fact that strategic alliances are not secrets, on the contrary they are usually public. A single company that is rather independent of other stakeholders possesses much greater possibilities to use the positioning for surprise strategy. We moreover observe that the important consumer perspective is somewhat absent in D'Aveni's framework. He states that stakeholder satisfaction (S1) is essential but we argue that the consumer perspective holds the superior position since no company, no matter how deep pockets, can survive in the long run without satisfied customers. In addition, we also appreciate the need to extend D'Aveni's framework to open up new arenas in order to successfully manage hypercomplexity and we express the importance of recognising and take advantage of the following perspectives:

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[167] Petrick I.J., Echols A.E. (2004)

[168] Rühli E., (1997)

[169] Grant R.M. (2001)

[170] Brown S.L., Eisenhardt K.M. (1998)

- The size of the company
- The influence of converging industries
- The power of branding and design

D'Aveni's framework does not take into account the size variation in terms of market shares and revenues between the competing companies. In reality not all companies are large but they still need well-functional strategies to guide them. With the 'New 7S's model' and its recommendations it may be hard for smaller companies to constantly utilize all seven S's at once, or even one of them for a longer time due to lack of capital and management resources. The influence of converging industries may also affect a company's strategic possibilities. D'Aveni primary discusses companies in a common industry while hypercomplexity recognise the importance and implications of two or more industries that converge to a larger and more complex industry. The consequences of this may also affect the individual company's strategies since the 'New 7S's model' does not mention the power of branding and design. Even tough a product has a better technical specification the consumer may choose to not purchase it due to brand loyalty. The consumer may be more appealed by a strong brand and image than by raw technical facts, which we believe is an important factor to acknowledge, especially for the telecommunication industry.

Finally, we also conclude that staking out a genuinely different position in hypercomplex industries nationally or globally, and in the minds of the customers, is very difficult but crucial to success. With our definition and clarification of hypercomplexity, we add a new component in the company's strategic toolbox and additionally a strategic competitive advantage. Nevertheless, Heracleous states that there are, of course, no solutions that can guarantee competitive success in turbulent environments[171]. What we do know is that too often we see industries in which similar business models are being adapted to the determinant of both consumers and shareholders. Styles states that it is *no longer safe to be safe* and we agree.[172]

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[171] Heracleous L. (2003)

[172] Styles C. (2004)

5 Analysis

In this chapter we explore the different arenas of competition as well as the evolution of hypercompetition into hypercomplexity. As a result of our empirical and theoretical findings, we develop a framework containing five considerations aiming to guide Sony Ericsson in the hypercomplex business landscape. Finally, we examine the mobile TV/Video business model and discuss how the revenues will be divided through the value chain.

5.1 Reality kick-back

With our preceding empirical and theoretical findings we have defined the hypercomplex business landscape. Some old rules and common practices may still hold true while others may not apply in this landscape. The question is which of the D'Aveni's arenas of competition that do hold true in the case of mobile TV/Video and Sony Ericsson as well as the applicability regarding our new arenas[173].

5.1.1 The four arenas of competition

In the first arena of *cost and quality*, both the mobile network operators and mobile phone manufacturers have broad product portfolios, which aim to satisfy all market segments and to offer the latest technology. As a result of the intense competition in the telecommunication industry, both the mobile network operators and the mobile phone manufacturers are experiencing falling prices. The voice call rates are steadily decreasing and are estimated to fall 12 % globally in 2006. The average sales margin for a mobile phone was 16 % in 2002 and has declined to 11 % in 2005. For a small volume manufacturer such as Sony Ericsson, decreasing margins is a serious threat, with maintained volumes and decreasing margins, the profits will most likely decline. Nokia, which sells more than five times as many mobile phones as Sony Ericsson, can compensate lower margins with higher sales volumes in order to protect profits.

Know-how and timing constitute the second arena and the mobile phone manufacturers compete in delivering new and differentiated mobile phones to the market at a rapid pace. This implies that the mobile phone's life cycles are becoming even shorter and the consumer seems to be more demanding, which demands great knowledge regarding product development and consumer needs as well as proper strategies concerning when to introduce the mobile phones to the market. We acknowledge that the top five mobile phone manufacturers offer rather technology homogenous products in the sense that they tend to offer the same basic features, such as camera-enabled phones as well as mobile phones that have an integrated MP3-player. The difference seems to be which company who introduces the feature first. Although, if Sony Ericsson should pioneer a new feature in their mobile phones, the rest of the top five manufacturers will most likely imitate that move and offer the same feature as soon as possible in their mobile phones.

The third arena regards *stronghold and protection* and the mobile network operators, mobile phone manufacturers and infrastructure suppliers have effective barriers to enter due to the capital-intensive nature of their business. Companies that are interested in entering these business areas need large capital resources in order to initiate business operations. Hence, the competition will most likely be between the existing companies. Therefore, strategies to compete with the existing competitors may be needed. A strategy used by the mobile network operators is to lock-in their customers by offer subsidized mobile phones in exchange for subscriptions. Thus, the mobile network operator has an exclusive right to the consumer for a specified time range. The corresponding strategy we identify for the mobile phone manufacturers, such as Sony Ericsson, may be brand loyalty and superior design.

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[173] D'Aveni R. A (1995)

The last arena considers *deep pockets* and companies such as Samsung and Nokia generate vast amounts of capital and have the possibility to engage in deep pocket strategies, meaning that they could outlast smaller competitors, such as Sony Ericsson. Furthermore, if their products do not become as successful as expected, they will not suffer as much as their smaller counterparts. Deep pockets also enable capital intensive firms to acquire the needed competence and knowledge, therefore Nokia and Samsung may use this strategy to compete with Sony Ericsson as well. However, Sony Ericsson could utilize deep pocket strategies by initiating alliances with larger and more capital-intense companies.

5.1.2 New arenas of competition

We conclude that D'Aveni's arenas of competition could be applied on the case of mobile TV/Video and Sony Ericsson, as illustrated by the discussion above. However, this does not indicate that hypercompetition is present in the entire mobile TV/Video value chain[174]. After reviewing our empirical and theoretical findings, we believe that there are variations in the state of competition throughout the mobile TV/Video value chain. As we have stated, the value chain consist of two converging industries and therefore it may be reasonable to assume that the competition may vary across the extended value chain. However, we consider it to be *intensive competition* between the top five mobile phone manufactures and among the mobile network operators, as illustrated in Figure 5:1.

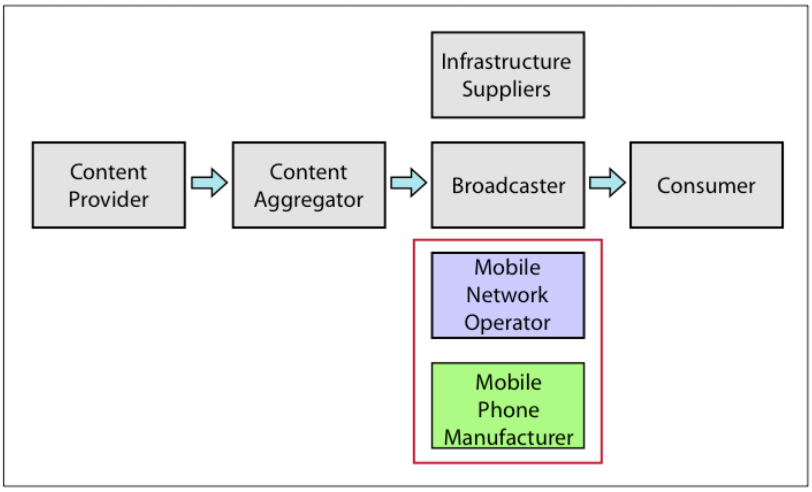

Figure 5:1 *Variation in the competition in the mobile TV/Video value chain*

To state whether hypercompetition exists, or if it is just intense competition, in the value chain is a rather subjective question. Hence, we are not entirely certain what the answer is. However, we are rather certain that the competition is fierce, especially in the highlighted area in Figure 5:1, and that D'Aveni's framework may be applied in order to develop competitive strategies.

5.2 The evolution of hypercompetition into hypercomplexity

When expanding D'Aveni's advices regarding hypercompetition with our three arenas stated in the preceding section, an extended framework can be crystallized[175]. This extended framework may be used to navigate in the hypercomplex business landscape. First, we begin with examine the value chain needed to deliver mobile TV/Video to the consumer.

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[174] D'Aveni R.A (1995)
[175] Ibid

5.2.1 The extended value chain

We have observed that in a hypercomplex business landscape previously separated industries tend to converge due to the technological development, which constantly pushes the industry’s boundaries in search for new business opportunities. When new telecommunication products and services are developed, companies such as Sony Ericsson, Vodafone and Ericsson cooperate and establish a value chain in order to serve the consumers. Vodafone invest in infrastructure from Ericsson and mobile phones from Sony Ericsson. Together they form a telecommunication value chain and the performance of the value chain depends on the individual companies’ performance and how well the value chain is coordinated and to the extent a common strategy is formulated. Sony Ericsson and the other companies in the telecommunication industry have been cooperating for years and know each other well and are used to develop common strategies. However, in the case of mobile TV/Video, the media and telecommunication industry seem to converge and we believe that Sony Ericsson and the other participants may consider the consequences of this. In order to offer the consumer mobile TV/Video services, an extended value chain is needed, containing companies from both the media and telecommunication industry. The need for cooperation and common strategies will be even more important in this hypercomplex business landscape. Thus, the media and telecommunication industry may establish common goals and agendas throughout the mobile TV/Video value chain, since this approach enable companies to access and take advantage of each others specific knowledge and experience. For example, Sony Ericsson may learn from the media industry how to develop a TV-like user experience in their mobile phones. We conclude that broad knowledge and experience is needed when developing advanced products and services in converging industries, such as mobile TV/Video. Neither Sony Ericsson nor the other participants have the knowledge and competence in-house that match the entire mobile TV/Video value chain.

In order to increase the performance in hypercomplex business landscapes, we believe that strategic alliances significantly can improve both the individual and overall performance. Sony Ericsson, which is a rather small company compared to Nokia and Motorola, may benefit from collaborate with other companies. A strategic alliance could reduce risks, offer knowledge sharing and increase market power and size. To reduce the risks is important for Sony Ericsson who cannot afford to engage in highly uncertain products and markets alone. Improved bargain position due to increased market power is also important to Sony Ericsson when it comes to establish partnerships and common solutions. We conclude that strategic alliances also function as a positioning tool for companies, if Sony Ericsson initiates an alliance with a well-known company, such as Nokia or Vodafone, they may create credibility and reputation due to partner’s performance and market position. Furthermore, larger companies, such as Nokia and Motorola, are also likely to profit from strategic alliances due to the improved access to new innovations from the smaller companies’ often more flexible R&D and integration activities. However, not all strategic alliances are win-win situations. Sometimes companies give away more skills and knowledge than they gain, and we urge the management of Sony Ericsson to decide and communicate what skills and technologies that is off-limits for the partner companies. We would like to remind Sony Ericsson, if initiating a strategic alliance, that an alliance is just another form of competition and it demands clear strategic objectives in order to become successful. A first step in accomplishing transparency is to identify what companies participating in the regular or extended value chain as illustrated in Figure 5:2.

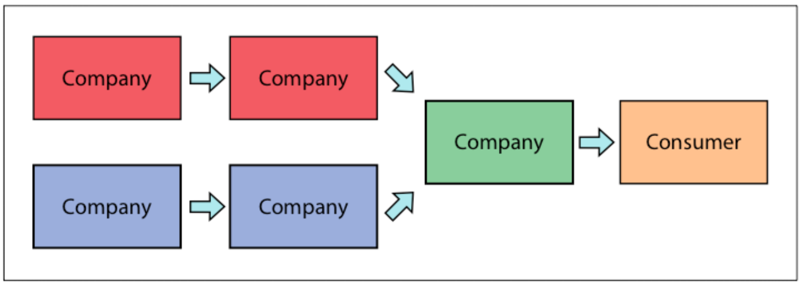

Figure 5:2 *The extended industry's value chain*

In addition, Sony Ericsson may constantly evaluate and learn from their previous products in order to stay competitive. If ignoring this, the product development could suffer, and potential improvements may not be implemented, which eventually might lead to a decreased competitive position. If Sony Ericsson adopts a constant evaluation and learning process regarding their successes as well as their mistakes, they will most likely be better and faster at developing new products leading to an increased competitive position. However, we have observed that companies in the telecommunication industry usually adapt a technology push strategy, meaning that they first develop the products and then try to market them. This implies an exclusion of the consumer demands and requirements. If a substantial amount of capital is invested in products that nobody wants, financial losses will occur. In our opinion, conducting market research and get in touch with the consumers are of great importance, and will improve the chances of developing successful products and generate profits. In the case of mobile TV/Video it is rather easy to accuse the telecommunication industry to push this new technology to the consumers. Nevertheless, we question if anybody *really* appreciates mobile TV/Video besides the telecommunication industry? On the other hand, very few consumers probably did feel a certain need to take pictures with their mobile phones before camera enabled mobile phones were introduced by Sony Ericsson.

Another important factor influencing Sony Ericsson is when to introduce the product to the consumer market. If Sony Ericsson chose to be a pioneering company they can be a winner or a loser, the problem is that Sony Ericsson does not know the outcome before entering the market. Harrigan and Wang argue that companies should be pioneers in order to lock-in the market and capture market shares and in the end generate large profits[176]. On the contrary, we believe that Sony Ericsson can profit from *not* pioneering the market. The pioneering company needs deep pockets and endurance, which we believe Sony Ericsson does not have. Sony Ericsson may go bankrupt while trying to create a market for the product. Instead, Sony Ericsson may wait and see what the market wants and let the larger and more capital-intensive firms pioneer such as Nokia and Motorola. When the consumer market has decided what products and features to award, Sony Ericsson can quickly develop the desired product and features and launch it. Hence, we do not agree entirely with Harrigan and Wang, on the contrary we believe that it is not certain that Sony Ericsson would be the winner in the end if they would chose to pioneer the market[177]. However, we should state that companies developing new technologies often strive to create standards that other companies are willing to adopt. If Sony Ericsson creates common standards, instead of niche technologies, their chances to get a return on their R&D and integration investments increase. Nevertheless, we are certain that several competing technologies can harm and delay a promising market. There have been several standard wars the past decades, with consumers and companies not knowing what to choose. We believe that Sony Ericsson, other companies and consumers could profit from agreeing on a technological standard as soon as possible. As a result, complementary resources and products can be developed at an earlier stage, and the consumers will find the technology more appealing and valuable. If Sony Ericsson holds patents, it may be more profitable to share the technology in order to encourage market penetration and create complementary resources, which Sony Ericsson may have difficulties doing alone. However, we would like to add that there a some drawbacks with agreeing on a standard, such as holding back the development of competing technologies, which might be better than the proposed technology standard.

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[176] Harrigan K. R. (1998), Wang Y. (2006)
[177] Ibid

5.2.2 Positioning in the mobile TV/Video value chain

Allowing us to be more explicit, several companies in different industries compete and aim to position itself against the surrounding environment in the mobile TV/Video value chain. The mobile network operators, who have a strong position in the telecommunications industry are looking for new revenues, and hope that mobile TV/Video will be a success. The mobile network operators usually own the billing relationship with the consumers, and we are certain that they are not willing to loose their close relationship with the consumers. The broadcasters see an opportunity to enter the telecommunications industry in order to seize additional revenues with the introduction of digital broadcasting to mobile phones. The major concern for the broadcaster is that they do not have an established relationship with the potential consumers when it comes to mobile services. In addition, they do not have the needed infrastructure and networks yet. The broadcasters have the possibility to compete or cooperate with the mobile network operators in delivering mobile TV/Video to the consumer. The infrastructure suppliers are willing to supply both the mobile network operators and broadcasters with the desired technology. Ericsson is promoting cellular broadcasting while Nokia is promoting the digital terrestrial broadcasting technology, but they will most likely offer whatever technology the mobile network operators choose to implement. Sony Ericsson and the other mobile phone manufacturers also have the mobile network operators as customers, and they will do their best to please them. Mobile TV/Video is an opportunity for Sony Ericsson to broaden their product portfolios and increase the average selling prices. The top four manufacturers will, to some extent, support DVB-H while Sony Ericsson has not announced such a mobile phone yet. The content providers can sell their existing products in a new platform, which will generate supplementary revenues. They do not seem to be willing to take an active role in mobile TV/Video and invest larger amounts of capital. We conclude that the stronger position, the better barging power regarding the establishment of the business models and revenue sharing will the company enjoy.

To choose between competing technologies is often a difficult task, the winning technology may not be the best. A classic example is the Qwerty-keyboard, which have survived several competitors even tough it is regarded as a rather poorly invention in an ergonomic perspective. In the case of mobile TV/Video distribution technologies, there are two main categories to choose among. We advocate that the DVB-H technology is the most suited for distribution of mobile TV/Video services due to the strong industry support from companies such as Nokia, Motorola, Intel, Texas Instruments and Microsoft. In addition, DVB-H is one of the most likely technologies to offer an adequate user experience. When considering this, we find that DVB-H will probably be the dominant design. Thus, our advice to Sony Ericsson is to invest in the technology that is most likely to be the dominant design in order to reduce the risk and increase the future sales volumes.

5.3 A framework for navigation

In order to position itself optimal, Sony Ericsson and the other companies in the mobile TV/Video value chain may evaluate their position and establish competitive strategies. In addition to D'Aveni's framework, we have in our theoretical findings extended hypercompetition to also include three arenas that we consider important[178]. With this in mind, we have developed our five *considerations*, which aim to assist the managers of companies in the mobile TV/Video value chain to navigate in this hypercomplex business landscape.

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[178] D'Aveni R. A. (1995)

The first arena considers *the size of the company and s*maller companies, such as Sony Ericsson, may have disadvantages regarding economies of scale and scope and less capital at hand for extensive R&D and integration efforts. In addition, the ability to be pioneering the market may be decreased for Sony Ericsson due to lack of access to capital and market power and this should be recognised. *The influence of converging industries* constitutes the second arena and the media and telecommunications industry tend to converge with the introduction of mobile TV/Video. A consequence of this may be that Sony Ericsson and the other participants may have to consider this when strategising and developing mobile TV/Video. Broadcasters that have not been present before in the value chain may enter the market and compete or cooperate with the mobile network operators, which are one of Sony Ericsson's largest customers. The third arena regards *the power of branding and design*. We consider Sony Ericsson as a medium to high-end brand with focus on design and advanced features. Brand loyalty among consumers and the design of the mobile phone may have great influence regarding the choice of which brand to purchase. Therefore, we believe this is an important aspect to appreciate.

We will next apply our framework in the mobile TV/Video case and consider how Sony Ericsson could position itself and may compete successfully. The *first consideration* regards the observation of how the two previously separated industries of media and telecommunication seem to converge into an extended industry due to the more media-rich mobile services developed, such as downloadable music and mobile TV/Video. In addition, these new advances in technology enable new participants to enter the market and compete or cooperate with the "old" companies. On the contrary to cellular broadcasting, digital terrestrial broadcasting technologies enable traditional broadcasters to enter the mobile TV/Video service to compete or cooperate with the mobile network operators. With the less successful introduction of 3G in mind, we insist on the importance of sound expectations and cross-industry cooperation in order to make mobile TV/Video successful. Two of the most important factors regarding the future introduction of mobile TV/Video to the consumer is ease of use and content, and not the technology that deliver it. In the consumers' point of view, they do not want to watch MBMS or DVB-H, they want to watch TV. For the technology-driven telecommunications industry, these are important factors to recognise.

Another important factor to consider is the production of mobile TV/Video services. We believe that media companies, rather than mobile network operators, are much more suited to develop content to mobile TV/Video, and consumers are more likely to embrace the services when using well-know media brands rather than the mobile network operators' own branded services. The question is which approach the media industry will have. We believe that they will choose to cooperate with the mobile network operators in delivering TV/Video to mobile phones. By cooperate in the new extended value chain, containing companies from both the media and telecommunications industries, high-quality content can be distributed with the latest and most suitable networks to mobile phones that are optimised to give a rich TV-experience to the consumers. We do not believe that a single company can deliver this on its own, the knowledge and competences of the individual companies are needed. The mobile network operators are used to control the industry value chain, containing only telecommunication companies. With the introduction of mobile TV/Video, the mobile network operators should decrease their role in the value chain and involve the media industry to a further extent than before. This is due to avoid fierce competition and increasing the revenues on a long-term basis. However, the mobile network operators seem to be more eager to launch a mobile TV/Video service than the media industry and the media industry is needed in order to make the service successful.

Based on our discussion we conclude that:

Consideration #1
Cross-industry cooperation and alliances may be essential in order to compete when the media and telecommunication industry tend to converge with the introduction of mobile TV/Video.

The *second consideration* regards economies of scale and scope, which we believe are vital in the telecommunications industry in order to survive on a long-term basis. This is even more important in mature industries, and we regard the telecommunications industry as mature due to the fact that the selling prices of the products are falling, the product life cycles are becoming shorter and the competition among mobile network operators and mobile phone manufacturers are rather intensive. Styles argue that companies in mature industries should break out and reinvent their business, and well-known examples such as Dell are mentioned[179]. A stand-alone product is often easier to re-invent than a mobile phone due to the lack of pre-determined specifications. Hence, in Sony Ericsson's case it might be difficult to reinvent their business due to the heavy dependencies of interoperability and cooperation with their customers and suppliers, such as infrastructure suppliers and mobile network operators. The product itself should, i.e. the mobile phone, comply with a number of pre-determined specifications and standards. The telecommunications industry only functions if all equipments, products and services use common standards. This is likely to have constraints regarding the product characteristics.

We conclude that in the case of Sony Ericsson, it might be more suitable to adapt the more common engineering excellence path in order to compete, i.e. strive to lower costs and increase efficiency instead of try to reinvent the their business. To further strengthen this conclusion, we point out that the market acceptance of new technological development is highly uncertain. Sony Ericsson may be forced to have a more focused R&D and integration strategy compared to the top four manufacturers due to the lower production volumes. In our point of view, Sony Ericsson can not afford to support and integrate several mobile TV/Video technologies in their mobile phones and then let the market decide which one to award, the company needs to choose the technology that is most certain to generate sufficient volumes and revenues. Hence, by only developing mobile phones supporting one of the distribution technologies, the R&D and integration costs can be reduced, and consequently the cost per mobile phone will decline. We do understand the importance of conducting extensive R&D in order to build competitive product portfolios, but, if Sony Ericsson's R&D-department should run simultaneous projects regarding different distributions technologies and the integration of these, the cost will be rather high compared to the size of Sony Ericsson.

Consideration #2
Size matters. Economies of scale and scope are crucial in the telecommunication industry, small companies with low volumes will have difficulties to keep up with the technological development due to high production and R&D and integration costs per unit.

The *third consideration* regards Porter's argument that companies must choose between cost focus *or* differentiation advantage[180]. We believe that companies striving for survival in hypercomplex industries should be able to do *both* simultaneously. Hence, our analysis is not in conjunction with Porter. Sony Ericsson should therefore develop differentiated mobile phones in addition to conduct an internal cost focus strategy. D'Aveni states that no company can build sustainable competitive advantages, and all competitive advantages will erode in the future[181]. We agree to some extent with D'Aveni and argue that some competitive advantages are easier to copy and to disrupt than others. Brand and design are some competitive advantages that are rather difficult to copy *entirely*, the consumers have a well-establish recognition about various companies' brands and images. According to us, Sony Ericsson is regarded as a medium to high-end brand, with attractive product design and user-friendly interface and we believe that technology development also could affect a company's brand and image. Mobile TV/Video will initially not be a mass-market service, with modest sales volume the first couple of years, and only high-end mobile phones will have the feature. However, by introducing advanced products, Sony Ericsson can signal its capabilities in order to strengthen the brand and image. Hence, Sony Ericsson can attract both medium and high-end consumers by introducing TV enabled mobile phones due to its strong brand and image. An illustrative example of this strategy is the automaker Mercedes Benz, which is well-known for its luxury cars. Mercedes Benz also offer medium-end cars and the consumers are attracted to them, among other things, due to the strong brand built on luxury cars.

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[179] Styles C. (2004)
[180] Porter M.E (2004)

Even when using the most effective and advanced distribution technologies, the mobile phones should have a well-designed and intuitive TV-application. We believe that Sony Ericsson has the needed skills to develop a user-friendly interface due to the ties with Sony, which are one of the world's largest media and home-electronics companies. Hence, we argue that Sony Ericsson has an advantage in design and knowledge regarding the TV-media that will enhance the perceived mobile TV/Video experience. By using effective marketing strategies and branding to communicate their TV-friendly products, Sony Ericsson can position itself above the average mobile phone manufacturers. In conclusion, these advantages can be used by Sony Ericsson to develop the needed differentiated and well-branded products, with above average selling prices.

Consideration #3

Sony Ericsson need to adopt both the generic strategies simultaneously, i.e. they need to be differentiated and have a cost focus at the same time when competing in hypercomplex business environments

The *fourth consideration* regards the question if Sony Ericsson should be a first-mover or not. The theory presents first-mover advantage as a strategy of handling hypercompetitive industries. However, we do not think it is realistic for Sony Ericsson to act as a first-mover due to the limited resources at hand. The largest mobile phone manufacturers have much greater financial resources and R&D and integration budgets and they are likely to use a "deep pocket" strategy to fight off competitors. Simply put, Sony Ericsson cannot afford to invest large amounts of capital in development and integration of several technologies at a faster pace than its competitors. We conclude that it will be more suitable for Sony Ericsson to adopt the "wait-and-see" approach described by Heracleous, and implement the technology that the majority of its competitors choose and compete on design and branding instead of technological pioneering. Heracleous states that there are risks associated with being a follower instead of a leader, and that strategic drift may occur and the company loses contact with the market[182]. However, we believe that Sony Ericsson has the ability to be a follower in some areas, such as mobile TV/Video, and be a leader in other areas, such as music mobile phones. Supporting this view, is the fact few companies are market leaders in all their product categories. In addition, Sony Ericsson is, according to us, a consumer goods company that conducts many market researches, and we do not think there is a risk of loosing contact with the market. Grant also states that not all leading companies will survive, some companies will absorb the cost of introducing new technology only to go bankrupt and see other companies reap the benefits of their work. Mobile TV/Video might be such case, where the high uncertainties regarding the market development will result in substantial costs for the pioneering companies, while the following companies, such as Sony Ericsson, have the possibility to let the competitors find out what the market wants, and then launch their products with the desired functions and design.

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[181] D'Aveni R. A. (1995)

[182] Heracleous L. (2003)

In addition, needed complementary resources, such as software solutions and support from third-party suppliers, may take time to build, and Sony Ericsson can not do this alone. According to us, the benefit of not pioneering the market is that Sony Ericsson will have enough time to fully develop and test the product before launching it. If Sony Ericsson would chose to act as a pioneer in the market they may risk getting a bad reputation among the consumers when releasing products too soon, and thus with reduced functionality and stability, in order to establish first-mover advantage. We would also like to add a further observation regarding the discussion whether Sony Ericsson should be a first-mover or not. It might be of importance to be a first-mover when it comes to essential new technologies. However, in time, when the new technology becomes an every-day product, other factors will be of competitive advantage, such as design, brand, price and ease of use. Even tough Sony Ericsson might be the last company among the top five manufacturers to introduce a digital broadcasting enabled mobile phone, this does *not* imply that Sony Ericsson's mobile phones will be worse than the mobile phones produced by the pioneering company. In some year's time, few consumers will even know which company introduced the first digital terrestrial broadcasting enabled mobile phone. What they probably will remember is which company that produced a less functional mobile phone affecting the company's reputation.

Consideration #4
Sony Ericsson may not have to be a pioneer in order to become successful, instead they could be a follower and let their competitors pay for the market research.

The *fifth consideration* regards standards and strategic alliances. We believe that standard wars harm and delay the market penetration of mobile TV/Video. To enable growth we recommend Sony Ericsson and the other participants in the mobile TV/Video value chain to use strategic alliances and create standards, which are imperative in order to secure a successful implementation. All participants in the extended value chain will profit from establishing a common standard in order to create a market that attracts consumers and complementary resources. Steiber states that the consumer will most likely be more positive towards mobile TV/Video if there was a single standard solution[183]. We believe that TV/Video enabled mobile phones will come with a price premium, and the consumers are not willing to take a chance on which technology that will offer them the best TV-experience. Thus, we state that a standard solution enables an easier comparison between different products and the complexity in the purchase decision decreases. Additionally, with standard solutions, the market for complementary products and services increases, and the consumer will feel more confident that her product will be supported in the future. As a result of this, the market acceptance will probably be faster and broader, which Sony Ericsson and the other participants profit from. Furthermore, the telecommunications industry relies on the cooperation and interoperability between the participating companies, and in an economic perspective, it is highly uncertain that several technological solutions will prosper simultaneously. The mobile network operators acquire the needed network equipment from the infrastructure suppliers and mobile phones from Sony Ericsson and their competitors. We do not believe that the mobile network operators are willing to invest in and implement several different distribution technologies simultaneously. On a global basis, there is likely to be several different mobile TV/Video standards, markets as South Korea and Japan has adapted distribution technologies that probably will stay domestic. This has implications on some of the companies in the mobile TV/Video value chain. Sony Ericsson, for instance, has global operations, and they should therefore make several adjustments of their products to comply with regional standards. The mobile network operators usually have less global operations, and tend to conduct their operations more regional. Hence, a regional mobile network operator can choose to just implement one distribution technology.

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[183] Steiber R. (Interview, 2006-03-08)

The mobile TV/Video market is likely to be a “the winner takes all” market, just like the PC market where Microsoft has a very dominant position in operating systems and office applications. Nokia, which will sell both mobile TV/Video enabled phones and network infrastructure, is strongly advocating the DVB-H solution, and many observers agree that this solution will be dominant. This fact is hard to ignore, and Sony Ericsson should take advantage of Nokia’s intensive promotion of the technology by initiating further strategic alliances. Sony Ericsson and Nokia have already signed an agreement of interoperability, which means that Sony Ericsson’s mobile phones and Nokia’s network equipment will work properly together. Strategic alliances could be a way of reducing the risks and the cost of R&D and integration when developing TV/Video enabled mobile phones. With this in mind, Sony Ericsson should adopt the technology that seems to be the most accepted by the market, in this case DVB-H, in order to reduce the risks associated with introducing new technology-oriented products. However, a strategic alliance with leading companies in the telecommunications industry does not necessarily mean that Sony Ericsson will loose their identity and produce generic products that are not differentiated compared to the competitors’ products. We suggest a strategic alliance aiming to promote a standard solution and technology core, and let the companies in the alliance compete with each other on design and price.

Consideration #5
The telecommunication industry should not destroy the mobile TV/Video market with different competing technological solutions, instead establish strategic alliances and co-create a market with strong consumer focus.

5.3 Business models

We have discussed mobile TV/Video in different perspectives, such as consumer focus, technological development and strategic possibilities. Furthermore, we have stated that a competitive strategy can help Sony Ericsson to position itself in the hypercomplex business landscape of mobile TV/Video. Even so, one essential question remains unanswered, how will the business model be designed – and who will receive the largest share of the revenues? The mobile TV/Video business model depends on which distribution technology that will be implemented. The participating companies in the value chain can use our framework to position itself against its environment in order to gain bargaining power when establishing the business model.

First, we conclude that Sony Ericsson and other mobile phone manufacturers only act as a service enabler, but an important one. Without the mobile phone manufacturers there cannot be mobile TV/Video services at all. Sony Ericsson does not receive a share of the revenues generated from the sale of content and services, instead they generate revenues when selling mobile phones to mobile network operators or consumers. The estimated market value of TV-enabled mobile phones is US $30 billions in 2010. According to us, Sony Ericsson is considered to be a medium to high-end brand with a strong market position in the upper segments due to their successful camera and Walkman-branded music mobile phones. Thus, we believe that their market share in the mobile TV/Video segment will be at least 6 %, which is the same as their current overall market share of 5.9 %. The 6 % market share is equivalent to US $1.8 billions (6 % of US $30 billions) in revenues for Sony Ericsson.

Second, the mobile network operators possess a central role in the mobile TV/Video value chain and by implementing cellular broadcasting they maintain their control over the value chain and the consumers. Although the mobile network operators’ revenues might be larger with cellular broadcasting they have no risk sharing and the consumers might not adopt mobile TV/Video due to the channel and quality limitations with cellular broadcasting. If digital terrestrial broadcasting will be implemented, the business model will be slightly different. We believe that the mobile network operators, to some extend, will cooperate with the broadcasters and share the investments and risks. Hence, the revenues will also be shared between them, implying that the mobile network operators might receive less revenue with the digital terrestrial broadcasting in exchange for a lower risk. Based on our observations and the analysis process we conclude diverge business models and revenue sharing throughout the two different value chains with regards to the various distribution categories. Figure 5:3 is illustrating the business model based on cellular broadcasting.

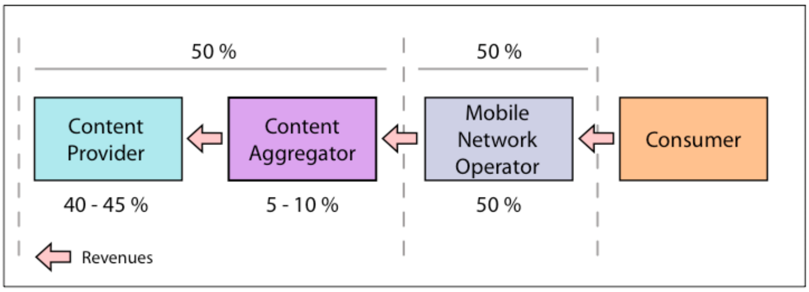

Figure 5:3 *Business model when using cellular broadcasting*

Our findings indicates that the mobile network operators will claim about 50 % of the revenues due to their marketing responsibilities of the service and billing relationship with the consumers, and distribute the other half backward in the chain. The content aggregators does not have such a prominent position as the mobile network operators, and will probably receive between 5-10 % of the revenues depending on the size of the company. The smaller content aggregators will have a hard time bargaining for more than 5 % according to us. The content providers will have a rather strong position due the fact that they own the rights to the important content. Their share will be the remaining 40-45 % of the revenues, and the share for the individual content provider will depend on how the content is packaged. If the mobile network operators choose to offer bundles of channels for a fixed monthly fee, which we find likely to occur, the content providers will split the 40-45 % of the monthly fee between them depending on how many channels that are bundled together.

In the case of DVB-H, the business model will be slightly more complicated due to the involvement of broadcasters, as illustrated in Figure 5:4.

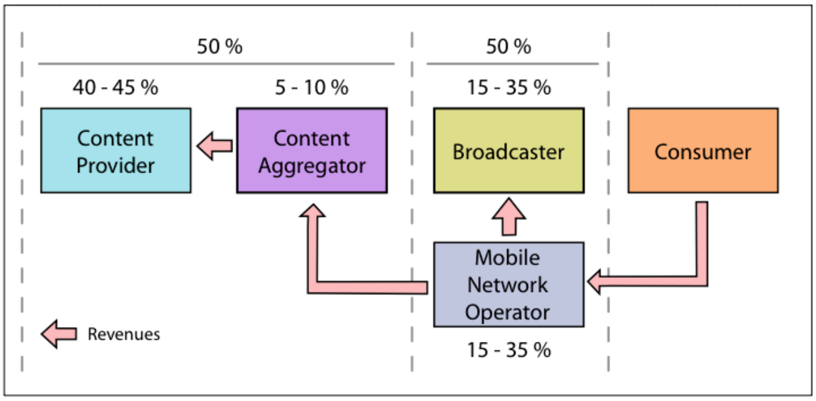

Figure 5:4 *Business model using digital broadcasting*

We estimate that the mobile network operators will have to share the 50 % of the revenues generated directly with the broadcasters. Depending on how the broadcasters and mobile network operators choose to cooperate, the revenue split between them may vary due to the investments made. The remaining 50 % of the revenues will be distributed in the same way as with cellular broadcasting. This implies that the mobile network operators will generate less revenue from the DVB-H solution compared to the cellular broadcasting counterpart. However, the risks and investments are shared with the broadcasters in the DVB-H case, which we believe is important for the mobile network operators, which already have made large investments in 3G-networks.

As our analysis of mobile TV/Video has indicated, the subject is complex due to the fact that various companies from different industries need to interact with each other in order to deliver the mobile TV/Video service. In addition, intense competition is present in the telecommunication industry but our considerations provide guidance for Sony Ericsson navigating in the hypercomplex business landscape.

6 Conclusions

In this chapter we recapitulate our findings from the analysis and describe the nature of the mobile TV/Video service and the hypercomplex business landscape as well as compile recommendations to Sony Ericsson. In addition, we try to render general recommendations from our research and question if they may be applicable outside the case of mobile TV/Video.

6.1 The competitive landscape of mobile TV/Video

In order to deliver the mobile TV/Video service to the consumer, a value chain consisting of companies from both the media and telecommunication industry is needed. In addition, there are two major technologies competing to become a standard, MBMS advocated by Ericsson and DVB-H pushed by Nokia creating different value chains. The MBMS technology uses the existing 3G-networks while DVB-H requires investments in new networks. Content providers and aggregators, mobile network operators, infrastructure suppliers, mobile phone manufacturers and possibly traditional broadcasters may be involved in the different value chains. However, the various participants have different motives with the introduction of mobile TV/Video, which may affect their strategies and positioning. The motives of the mobile phone manufacturers, such as Sony Ericsson, are to raise the average selling prices and to trigger upgrades by introducing high-end TV-enabled mobile phones. One of the mobile phone manufacturers' largest customers are the mobile network operators, which have influence on the services implemented in the mobile phones. Sony Ericsson is the only company among the top five mobile phone manufacturers that have not announced a mobile TV/Video enabled phone. In addition, Sony Ericsson has the smallest market share among the top five manufacturers, which may affect their possibility to act as a pioneer on the market.

The mobile network operators, which possess a dominant position in the telecommunication industry and owns the relationship to the consumer, are in need of new revenue sources to offset the declining voice revenues and the less successful introduction of 3G. In order to generate these revenues, substantial investments in infrastructure may be needed by the mobile network operators. Both the mobile phone manufactures and the mobile network operators may choose which technology to implement with regards to possible revenue generation and risks. The ordinary TV broadcasters and content providers have identified a new distribution channel in mobile TV/Video to sell existing and new content through, even tough they do not seem to be willing to make large investments or take a pioneering role. Thus, cooperation between the mobile network operators and the broadcasters is a possible outcome in order to reduce risks and share the needed investments.

As stated above, mobile TV/Video is a rather complex issue with companies from different industries that may cooperate or compete with each other, fierce competition between the companies in the different industries, there are two competing distribution technologies and high uncertainties whether the consumer will appreciate the service or not. This complex environment is characterised by rapid technology development and intensive competition, converging industries and mature markets with falling prices. We could not find an existing theoretical framework that may be applicable in this matter, so we developed a framework to navigate in such complex business environment ourselves.

Therefore, with our extensive empirical and theoretical findings our thesis has originated to define '*hypercomplexity*' as:

> *A business landscape composed of converging industries that demonstrate intense competition or even conditions of hypercompetition in part of or in the entire value chain of the service or the product. Few technological standards and substantial size variation, in terms of market shares and revenues, between the competing companies also affect the prerequisites. Combined with high uncertainties regarding future consumer market development, the landscape constitutes a hypercomplex business environment.*

6.2 Recommendations to Sony Ericsson

With the use of our framework we have concluded five recommendations to guide Sony Ericsson in the hypercomplex business landscape of mobile TV/Video:

1. Sony Ericsson should consider initiating cross-industry cooperation and alliances with other mobile phone manufacturers, mobile network operators and infrastructure suppliers.

2. Sony Ericsson should consider the dominant design DVB-H and invest only in that distribution technology in order to reduce the R&D and integration costs.

3. Sony Ericsson should consider adapting both a differentiated and a cost focus strategy simultaneously in order to create healthy margins.

4. Sony Ericsson should consider the follower strategy in order to reduce the uncertainties and compete on brand, design and superior user-interface instead. However they should also recognise the disadvantages with this strategy.

5. Sony Ericsson and the other participants in the mobile TV/Video value chain should consider co-creating a market by deciding to use a common standard technology, which all could profit from.

We have found that it is necessary to establish a business model favourable for the mobile network operators, which have a dominant position in the value and is likely to be needed for a broad market penetration. In addition, we would also like to emphasise two important aspects regarding the development of mobile TV/Video. *First*, the mistakes and unsound expectations regarding the launch of 3G should be kept in mind. The telecommunication industry, including Sony Ericsson, should constantly evaluate and learn from their previous product developments. A mistake with the introduction of 3G was the lack of interesting content to distribute in the high-capacity networks. *Second*, we suggest that the companies in the mobile TV/Video value chain remember the consumers and their demands and needs when developing mobile TV/Video. Therefore, well-known content from the media industry could be used and the mobile phones may be designed with easy-to-use TV-applications in order to appeal the consumer.

6.3 General recommendations generated from our research

During our research regarding the complexity of introducing mobile TV/Video to the consumer, we have made some interesting observations. These observations may be industry specific or they might be applicable in other industries to aid managers to navigate in hypercomplex business landscapes. We have also found that in the hypercomplex business landscape with converging industries, cross-industry cooperation and alliances are essential. In addition, companies in this environment need to adopt both the generic strategies simultaneously, i.e. they need to be differentiated and have a cost focus at the same time. As a consequence, economies of scale and scope are imperative in order to spread the R&D and integration costs over high production volumes. However, we have *not* found that a company have to be a pioneer in order to become successful. By being a follower, the company can let competing companies conduct market research and find out what the consumers want. When the market has decided what products to award, a company with a follower strategy can adapt the dominant design and enter the market and compete on product design, brand and user-friendly implementation. Still, when pursuing a follower strategy, the company should recognise and obstruct the disadvantages. When facing different technological solutions, the industry should instead establish strategic alliances and decide on common standards in order to encourage market growth. By using these considerations, a company enjoys increased chances to position itself in the value chain, thereby increasing its bargain power when establishing new business models. Nevertheless, no revenues will be generated unless the consumer finds the product or service appealing and companies should remember that in the end it is *the consumer* who decides if the product will be a success or not.

7 Future research

With regards to future research, we suggest a study to examine how prior technology cross-roads in the telecommunication industry and at Sony Ericsson have been managed. We also question if our hypercomplexity framework is applicable in other industries than telecommunication and media, or if the framework is rather industry specific.

- During the final stages of our thesis we started to wonder if the telecommunication industry had faced similar technology cross-roads and competing technologies previously. We are rather certain that the introduction of colour screens instead of monochrome screens in the mobile phones could be an example of this. The implementation of the colour screens must have been heavily debated prior to the decision. Would the increased cost be offset by the enhanced user experience and the possibility to introduce more advanced services? Would the colour screen be regard as a competitive advantage? An important aspect of this is how the involved companies handled these problems and the lessons they may have learned from it and the documentation of the lessons learned. Therefore, we suggest a study that examines this and how the telecommunication industry and Sony Ericsson handled such issues.

- Our framework may be applied on other industries and in order to examine its validity, we suggest a study of '*Triple Play*' for instance. Triple Play means that a company offers broadband access, telephony and TV through a single network connection to the consumer. There are currently several companies that offer, or plan to offer, this to the consumer. The previously separated industries of telephony and TV seem to converge with the broadband access industry, forming yet another converged media and telecommunication industry. This implies that the ordinary telephony companies will face increase competition due to the Internet-based telephony services offered by Triple Play. One of the companies who started this trend is the Swedish company Skype. Skype is a computer program that allows the consumers to talk to each other over the Internet instead of traditional telephony networks. Also the TV companies may be affected by the introduction of Triple Play. The need of expensive investments in broadcasting infrastructure may not be necessary in order to distribute TV programs and movies with the emergence of Internet-based TV. Thus, the barriers to enter the TV market may be substantially reduced, which could open up for niche companies and others to compete with the existing TV companies. The possible value chain for Triple Play could resemble the mobile TV/Video value chain, with content providers and aggregators. Instead of mobile network operators, the broadband access operators may be the company who owns the consumer relationship and dominates the value chain. Or could it be the content providers who dominate the value chain and the broadband access operators will only act as a service enabler? These are rather intriguing questions – and we welcome a study of this with our hypercomplexity framework as a tool.

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