Abstract

In this thesis, media convergence strategies and added value of digital news services are investigated, focusing on the newspaper industry and it's audience.

Convergence implies that previously unalike areas come together, approaching a common goal. A subordinate concept of convergence, i.e., media convergence, is a concept that has become common when denoting a range of processes within the production of media content, its distribution and consumption.

Newspapers are one of many so-called publishing channels that provide information and entertainment. They have traditionally been printed on paper, but today's digital technology makes it possible to provide newspapers through a number of different channels. The current strategy used by newspaper companies involves a process of convergence mainly regarding multiple publishing. A newspaper company interested in publishing content through multiple channels has to adapt its production workflow to produce content not only for the traditional printed edition, but also for the other channels. In this thesis, a generalized value chain involving four main stages illustrates the production workflow at a newspaper company in relation to the convergence processes. The four stages are creation, packaging, distribution and consumption of content.

One of the aims of this thesis is to assess how the views and strategies of newspaper companies concerning media convergence correspond with the opinions and views concerning convergence of their audience. In order to discuss this, seven types of media convergence are suggested.

Furthermore, the thesis explores how the newspaper industry is relating to the processes of convergence, using two examples: newspaper companies' ventures into the use of moving images, and the newspaper companies' strategies for a future e-paper edition.

Among the findings of this thesis are that digital news services can add value to a newspaper company, however that the digital news services investigated, in their current form, are not sophisticated enough to give added value as perceived by the audience.

The findings of the thesis are based on studies of the newspaper industry in Sweden and reflect specific newspaper companies, their strategies, production workflow and ventures from 2002 to 2007. The methods used have mainly been case studies and surveys.

Foreword

This doctoral thesis, was written between the years of 2002 and 2007. The supervisor of the thesis has been professor Nils Enlund at Media Technology and Graphic Arts, School of Computer Science and Communication, The Royal Institute of Technology (KTH) in Stockholm, Sweden. I am grateful for his advice and guidance while writing the papers and thesis. I am also grateful to my co-supervisor Christian Persson at STFI for valuable comments. I would furthermore like to express my gratitude to all the companies and persons that have participated in the studies for the included papers of this thesis. And I would like to once again thank all the people that have been acknowledged in the included papers.

Writing this thesis could never have been done without the support and inspiration from my colleagues at the department of Media Technology and Graphic Arts and the fellow PhD students I know at other departments of KTH. Thank you!

A special thanks goes to my office room mate since 5 years, Sara Leckner. There is absolutely no way of describing the support that you have given me. You are my hero!

Finally, big hugs to my family and friends!

Ester Appelgren
Stockholm, October 2007

List of Included Papers

Paper I – ”Convergence and Divergence in Media – Different Perspectives”, by Appelgren, E. ICCC 8th International Conference on Electronic Publishing 2004, Brasilia, Brazil.

Paper II – ”Evaluating Digital TV as a Publishing Channel for Newspapers”, by Appelgren, E. and Nordqvist, S. TAGA 2003 Proceedings, Rochester.

Paper III – ”E-paper Production Workflow – Adapting Production Workflow Processes for Digital Newsprint”, by Appelgren, E., Sabelström Möller, K., and Nordqvist, S. TAGA 2004 Proceedings, Rochester.

Paper IV – “Adoption of interactive media services among young people”, by Appelgren E., in Proceedings of the 33rd International Research Conference, Iarigai”, 13th of October, 2006, Leipzig, Germany.

Paper V – “Interactive News Services – Competitors to the printed newspaper”, by Ester Appelgren, International Conference “ Transformations in the Cultural and Media Industries”, Paris Nord, La Plaine Stade de France, 25th of October, 2006, Paris, France.

Paper VI – “Perceived Simultaneous Consumption of Media Content Services among Media Aware University Students” in Proceedings of the I-Media Conference 2007, Graz, Austria.

Paper VII - Attitudes toward digital news services, by Ester Appelgren. Article to be published.

Media convergence and digital news services

- Adding value for producers and consumers.

1 Introduction

Media technology has over the past few decades increasingly found a central place in our every day life. People use media technology such as the TV set, the computer, the radio and the mobile phone to find information and to be entertained in all walks of life. Many of these media technology devices have developed to become more alike in the sense that they can handle the same kind of content using standardized formats. Such merging of technological capabilities in devices is one example of media convergence. The emergence of the internet is an example of another type of convergence, where several previously separate networks have been joined together.

Due to that devices are technologically becoming more alike, that networks have been joined together and the development of content production systems, it has become easier for media companies to produce content for several output channels, i.e multiple channel publishing. Furthermore, as people choose to consume content using several different devices, media companies are meeting the audience, and demands from advertisers, by providing content in several different publishing channels.

Fidler (1997) suggests that newspapers should be defined as periodic disseminators of timely, general interest information. Newspaper companies are media companies, where many are publishing in multiple media, however primarily producing content for printed newspapers. Newspaper companies were among the early news organizations to move to the web (Garrison, 2000, p.6). On the Internet, many newspaper companies therefore provide online editions, which have a frontpage where the content is updated daily or several times a day and where there are advertisements, links to older content and links to additional digital news services. The additional digital news services can be embedded in the layout of the online edition or separate, however accessible with links from the online edition. Three current examples of digital news services are: web TV, podcastings and blogs. Web TV, is in this thesis is defined as moving photographic images available at websites. Podcastings are here defined as audio and video files available for automatic download via subscriptions to handheld devices for example mp3-players, hand held computers and mobile phones as well as laptops or stationary computers. Blog are in this thesis defined as web pages, containing either text, image or audio content, presented as entries or so called posts, written or created by the owner or several owners of the blog.

Figure 1 illustrates some examples of news products offered by a newspaper company, such as the newspaper printed on paper and digital news services. In addition to these products, newspaper companies may produce books and other printed material as well as additional digital services. The online edition is currently the primary product of the digital news products. Furthermore, the other digital news products can in most cases

be accessed by links from the online edition. The arrow between the print newspaper and digital news products in figure 1, illustrates that sharing of content and resources may occur. There can also be sharing between the digital products.

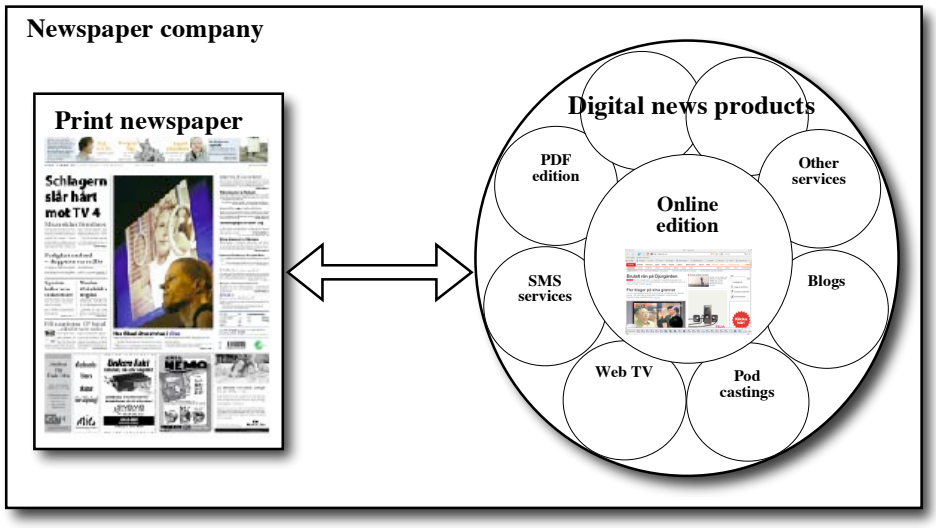

Figure 1: Examples of news products at a newspaper company.

The perspective of this thesis starts at the newspaper companies and how they are relating to media convergence both in terms of challenges and possibilities. With the introduction of digital news channels such as online editions on the market, researchers have discussed the survival of traditional news media, such as printed newspapers (e.g. Cepaite 2006, Pape and Featherstone 2005, Ihlström, 2004, Boczkowski 2002, Fidler 1997, Molina 1997, Pavlik 1996). In some non-scientific publications, such as for example The Economist (2006), newspapers are singled out as endangered species as they, of all the "old" media are said to have most to lose from new media and networks, such as the Internet. According to the Economist (ibid), "newspapers have not yet started to shut down in large numbers, but it is only a matter of time". The Editor in Chief at the Swedish regional newspaper Östersundsposten, Bosse Svensson (1998) stated that it is obvious that the audience eventually will leave the printed paper, if there is a medium that is faster, cheaper and gives endlessly more possibilities for individualization.

Some examples of typical questions posed by newspaper companies concerning the survival of the printed edition are as follows: Will the printed newspapers eventually be replaced by digital newspapers? Is it only a question of *when* the printed edition will be abandoned by the public and thus cease to exist, or is this just an unfounded fear? What can the newspaper companies do to protect the printed paper from ceasing to exist, or is the winning strategy to instead of protecting it, abandon their current primary channel and put more effort into the newer digital publishing channels?

Researchers have discussed these specific questions for decades, and some have been quite specific in their views of the future of the newspaper. According to Molina (1997) the digital newspaper shakes the stability of the traditional newspaper's one-to-many model due to its possibilities of interactivity, personalisation and updating. He further states that few industry observers doubt that newspaper companies are likely to become electronic content suppliers of multimedia news and information. Fidler (1997:251) describes how the newspaper has been portrayed as dinosaurs on the verge of extinction, and emphasizes that contradictory to this assumption, newspapers will instead of die, metamorphose into an even more versatile and popular communication medium by completing their current transition to digital publishing systems. An example of such a metamorphosis could be the process of when newspaper content is provided in what can be denoted as e-paper, a type of electronic paper reader device, which Ihlström (2004) believes to be a product that might replace the printed newspapers.

Media convergence and convergence of networks were mentioned in the beginning of this introduction. Convergence has been blaimed for the creation of competing publishing channels to print media (Cepaite 2006, Kaiser 2006). Convergence denotes in this thesis, in its most general form, processes where separate entities come closer to each other. These processes can involve devices, content, markets and networks, as well as media consumption. The opposite of convergence is divergence, and these two concepts are ironically enough closely related. As technological solutions, networks and gadgets converge, new publishing channels are created, which from an audience point of view can be experienced as a diversification of information outlets. Jensen (1998:40) illustrates this by stating that "what from one point of view looks like convergence may, viewed from another point of view, appear to be divergence". A similar standpoint is made by the CMC, Competence and Convergence centre at the University of Oslo (n.d) in their definition of convergence: "..convergence occurs in parallel with divergent tendencies in specialized services, terminals and markets".

In the context of media convergence researchers frequently discuss "new" and "old" media. With the so-called desktop publishing revolution (Fidler 1997), or the digital revolution (Manovich 2001), or the birth of the information super highway (Pavlik 1996), the introduction of the electronic incunabula (Bolter 2004, Saffo 1998) or as far back as the time when the information society rhetoric was a popular concept to discuss (Boczkowski 2002), printed newspapers have been discussed in terms of being "old", and other newer forms such as the online newspaper edition with it's extra digital features, are at least currently denoted as "new". The shift, that the above mentioned researchers all describe, concerns the same phenomenon, using different concepts and metaphors; the process of moving from analogue to digital. This particular process has furthermore often been associated or synonymous with the concept of convergence (Pavlik 1996).

There is a lack of research on how the newspaper industry relates to processes of convergence in comparison with how their audience relates to convergence, involving for example analyses of the value added of the digital news services for the newspaper companies and the added value of digital news services as perceived by the audience.

This thesis will address such issues, based on research carried out about media convergence and the newspaper industry in Sweden, focusing on digital news publishing channels.

In this introduction, the question about the survival of the printed newspaper has been raised. This thesis does not aim to answer this question, but to acknowledge the strive to find an answer to the question about the future of the printed newspaper as a driving force for inspiration. One has to keep in mind however, that a possible replacement of the printed newspaper by digital editions of newspapers does not solely depend on what is technologically possible, but also on what strategies the newspaper companies choose, what strategies their competitors form, and to the greatest extent, on what the readers will adopt, consume and pay for.

The above mentioned strategies formed at the newspaper companies together with attitudes of the audience will therefore in this thesis be discussed, all in the light of the influence of convergence.

1.1 Objectives of the thesis

As was mentioned in the introduction, the focus of this thesis is on newspaper companies and how they have related to possibilities and challenges brought to them due to convergence. The strategies and views collected from newspaper companies often involve the audience, their reactions and their views. One part of the research made for this thesis has therefore aimed at exploring views and attitudes among the users as a complement to the data collected from the newspaper companies. The research questions posed are:

- How do the views and strategies of the newspaper companies concerning convergence correspond with the opinions and views concerning convergence of their audience?
- How is the newspaper industry relating to the processes of convergence?

  What convergence strategies are there for publishing in multiple media at a newspaper company?

  How have the views on and strategies for publishing in multiple media changed in the past decades?
- How does the newspaper audience relate to the processes and effects of convergence in multiple media publishing?

  Does the audience consider it important that newspaper companies are providing other services than the printed newspaper?

  When the audience consumes digital news services do they perceive this as “reading a newspaper”?

  Has the audience interest, time and willingness enough to pay for the additional services?

This thesis thus aims to compare convergence views and strategies of the newspaper companies with the opinions and views of their audience. Media convergence will be discussed from different perspectives using the newspaper industry as the primary case. Convergence will be discussed with a starting point of media convergence as an ongoing process occurring at various intersections of media technologies, industries and audiences, as Jenkins (2001) describes it. Further, the aim is to study the value added of the digital news services for the newspaper companies and the added value of digital news services as perceived by the audience. What digital news services comprise and the changing definition of this concept will also be assessed.

1.2 Delimitations

The findings of the thesis are based mainly on studies of the newspaper industry in Sweden. The number of newspapers consumed in Sweden per 1000 inhabitants was 481 copies according to statistics from WAN in 2006 (TidningsUtgivarna 2007) and this placed Sweden in fourth place regarding newspaper consumption in the world. Because of the focus on the Swedish newspaper industry, the findings of thesis cannot be directly adapted to other parts of the world.

The findings of the thesis reflect on media companies and their strategies, production workflows and ventures during a specific time, namely from 2002 to 2007. Hence, the findings of the thesis cannot be regarded as timeless and are reliable only when describing this specific period in time.

Technology and strategies behind the services offered by the media companies are in addition to economical, legal and behavioural issues, driving forces for changes in the journalistic aspects of the content. The approach of the thesis has not been from a journalistic, design-oriented or legal point of view. It is furthermore not within the scope of the thesis to develop technological solutions.

When views and opinions from user studies are discussed, the discussion is based on data from relatively small samples and the respondents are mainly Media Technology students at the Royal Institute of Technology. The views and opinions can thus not be regarded as general opinions or attitudes, but give indications of trends in attitudes concerning the investigated news services.

1.3 Overview

This thesis consists of seven articles. The articles are about convergence between digital publishing channels, concerning technological, organizational and behavioral aspects, with a focus on the newspaper industry.

The thesis starts with introduction and background to the central concepts of the thesis, mainly the newspaper industry and media convergence. The methods used are described in the methodology section, followed by a summary of the included papers.

After the summary, the results of the papers, the methods used and some implications of the studies are discussed, followed by the conclusion section.

The order of writing the papers was as follows, Paper II, Paper III, Paper I, Paper IV, Paper V, Paper VI and Paper VII. The papers are not ordered chronologically in the thesis.

The author has contributed to the papers in the following manner:

Paper I
The paper was entirely written by the author.

Paper II
The case studies in Paper II were initiated by the Swedish Publishers' Association and were carried out together with Katarina Båth. The studies resulted in three reports (Appelgren and Båth, 2002a, b, c) in Swedish written by the author and Katarina Båth. The three reports and literature studies were the source of material for Paper I. The author is the main contributor and writer of Paper II.

Paper III
The case studies, interviews and literature studies in Paper III were carried out by the author. Initial ideas for the paper were discussed and decided on by all authors of the paper before the study was initiated. The author is the main contributor and the sole writer of the entire paper.

Paper IV - VII
The papers were entirely written by the author.

2 Central concepts – history and present

This section presents background to the central concepts of the thesis: media convergence, the newspaper and the newspaper industry, multiple channel publishing, the value chain from creation to consumption of news content, the flow of materials at newspaper companies, digital newspaper services, interactivity and consumption of digital news services.

2.1 Media convergence

In this thesis media convergence in it's most general form is defined as processes where separate media entities such as devices, networks, content or markets become more alike or are approaching each other. I have in this section decided to address the concept of convergence by quoting a selection of definitions on convergence from some of the current and past media scholars. I will return to discuss the concept, in the discussion section of the thesis.

Pool (1983:23) describes the process of media convergence, mentioned as "convergence of modes" as follows:

A process called the "convergence of modes" is blurring the lines between media, even between point-to-point communications, such as the post, telephone, and telegraph, and mass communications, such as the press, radio and television. A single physical means – be it wires, cables or airwaves – may carry services that in the past were provided in separate ways. Conversely, a service that was provided in the past by any one medium – be it broadcasting, the press or telephony – can now be provided in several different physical ways. So the one-to-one relationship that used to exist between a medium and its use is eroding.

According to Fidler (1997:278) convergence concerns:

Crossing of paths or combination that results in the transformation of each converging technology or entity as well as the creation of new technologies or entities.

According to Fidler (p. 25) in 1979, MIT media scholar Nicolas Negroponte was one of the first to popularize the concept of convergence in public speeches to promote the MIT Media Lab all over North America. This type of convergence concerned the media industries and digital technologies, that according to Fidler, would lead to new forms of so-called multimedia communication.

Bolter and Grusin (2000:224-225) point out that different industries will use the concept of convergence differently depending on their area of expertise. They further state that convergence means greater diversity for digital technologies as they remediate each other, i.e. "refashion prior media forms", in various ways and ratios to produce different devices and practises, and defines the concept as follows (p. 224):

Convergence is the mutual remediation of at least three important technologies – telephone, television and computer – each of which is a hybrid of technical, social, and economic practice and each of which offers its own path of immediacy.

Immediacy dictates according to Bolter and Grusin (p.6) that the medium itself should disappear and "leave us in the presence of the thing represented". In the example of convergence (p. 224), they refer to the telephone as it offers the immediacy of the voice or the interchange of voices, in real time, the television offers immediacy by insistent real-time monitoring of the world and the computer offers immediacy by combining 3D graphics, automatic programmed action and interactivity that the TV cannot match. They further describe that "as they come together, each of these technologies is trying to absorb the others and promote its own version of immediacy". Furthermore, the authors state that convergence may take place without the media entirely losing its identity (p.185).

Manovich (2001:20) refers to convergence when discussing new media:

New media represents a convergence of two separate historical trajectories: computing and media technologies.

Pavlik and McIntosh (2004: 19) define convergence as follows:

Convergence – the coming together of computing, telecommunications, and media in a digital environment. Convergence and the changes it is bringing are fundamentally changing many aspects of mass media and communication.

Pavlik and McIntosh continue with stating that there are four areas of implications due to convergence: the content of communication, the relationships between media organizations and their publics, the structure of communication organizations and how communication professionals do their work.

Jenkins (2006:18) states that convergence involves both a change in the way media is produced and a change in the way media is consumed. He defines convergence as (p. 282):

A word that describes technological, industrial, cultural, and social changes in the ways media circulates within our culture. Some common ideas referenced by the term include the flow of content across multiple media platforms, the cooperation between multiple media industries, the search for new structures of media financing that fall at the interstices between old and new media, and the migratory behavior of media audiences who would go almost anywhere in search of the kind of entertainment experiences they want. Perhaps most broadly, media convergence refers to a situation in which multiple media systems coexist and where media content flows fluidly across them. Convergence is understood here as an ongoing process or series of intersections between different media systems, not a fixed relationship.

Jenkins (p.6) describes how industry leaders has now returned their attention to processes of convergence after what he denotes as the "*popping of the dot-com bubble*" when their attention shifted due to the changed economical circumstances. Today, Jenkins claims that the concept is once again:

..a way of making sense of a moment of disoriented change. Convergence is, in that sense, an old concept taking on new meanings.

Jenkins also refers to the convergence culture, as a culture that we are now living in. This culture represents according to Jensen (p. 22-23) a shift in the ways we think about our relations to media as it is not only a matter of a technological shift but also concerning the relationship between existing technologies, industries, markets, genres and audiences (p.15).

The concept of convergence is discussed throughout this thesis. As was previously mentioned, the main example of different convergence processes will be taken from the newspaper industry, as this has been the focus of the research. Therefore, the next section will contain a brief background presentation of the newspaper and it's industry.

2.2 The Newspaper and the newspaper industry

Traditionally, media, and mass media in particular have been defined as the production and distribution of information on a one-to-many basis (Morris and Ogan 1996, Europe Economics 2002). Including not only mass media in the definition, media can be described as channels acting as intermediary for information and entertainment (NE, 2005). Media channels are thus used by different media companies to provide their content to an audience. Examples of such channels are TV, radio, newspapers, the internet or the mobile phone.

Newspapers have traditionally been printed on paper, but today's digital technology makes it possible to provide newspaper-like content through a number of different media channels. As was described in the introduction of this thesis, in the newspaper industry, newspaper companies produce printed newspapers as their primary product and offer in addition other products such as the digital online edition to their audience. The term edition will in this thesis be used to denote newspaper-like products produced by a newspaper company however always combined with a prefix, for example the printed, online or wap edition, to denote the difference between them. The following sections will describe what in this thesis are meant by printed newspapers, digital newspapers and digital news services. Furthermore as ownership of a media company in relation to the primary product of the company may be important in defining the nature the company's other sub-products, newspaper ownership in Sweden in relation to market convergence will be assessed. Another important factor when defining news services are by their business models. This section therefore concludes with a short review on literature concerning business models for digital news services.

2.2.1 Printed newspapers, digital newspapers and digital news services

There are many ways to define a newspaper. A newspaper can for example be defined as a product, which connects sources of news and advertisers with an audience of

readers. It can furthermore be defined as a mediator of information: “as the world makes news, the newspaper reports on it and the public consumes it”. (Barnhurst and Nerone 2001:2) Furthermore, one could define a newspaper by its physical characteristics: “a printed newspaper is a set of pages, and a printed newspaper page is a complex document containing several static visual information representation forms, such as textual, pictorial, and their many combinations (Wang and Srihari 1989:327). The printed newspaper is, according to Hadenius and Weibull (1999) furthermore often defined by publication frequency, type of content, place of publication, if it is a national or a regional newspaper, and if it is a morning or evening paper.

As was seen in figure 1 in the introduction of this thesis, news content is also provided by the newspaper companies in digital news services. In its most general form, a digital news service is in this thesis defined as digital news content packaged for an audience by a media company. A digital news service may for example be a digital newspaper, also in the literature denoted as an electronic newspaper, such as the online edition of a newspaper, or a pdf-file of the printed newspaper. Such digital news services are topical, regularly updated with content of mainly news, entertainment and advertisements. Other examples of digital news services from newspaper companies, which may not be updated or published as regularly as the printed and digital newspapers are the WAP (Wireless Application Protocol) edition and SMS (Short Message Services) services with content provided by the newspaper, web TV, podcastings or blogs provided by newspaper companies.

As was described in the introduction of the thesis, the online edition of a newspaper is defined as a web site carrying the name of the newspaper, were the newspaper company provide content to an audience. On the website, other digital news services such as web TV, podcastings and blogs can be provided embedded in the content of the online edition, or as complements to the online editions, available through clickable links leading to the news services.

Lundberg (2004), having analyzed websites of Swedish newspapers, states that online newspaper editions have a front page which may contain content elements such as text and images, elements for navigation, news streams with the most recent news, headlines, search/archive functions and different types of interactive advertisements. Lundberg also mentions other forms of rich media content. The digital newspaper is by Palmer and Eriksen (1999:33) seen as a digital hybrid, as it can replicate the printed newspaper in content and organization and be made to look like a traditional paper, but at the same time offer interactive multimedia content tailored for the individual consumer. Boczkowski (2004) suggests three types of information practises for publishing content in digital newspapers: repurposing, recombining and recreating. Repurposing is related to the term “shovelware” and means that content from a printed edition is published in the online edition without any changes. Recombining content is according to Boczkowski, when content is used from the printed edition in combination with new content. Examples of recombining content are customization of content, collecting the content of specific topics from several newspapers or providing archives of already published content. Finally, the third of Boczkowski’s information

practices, recreating, concerns content which is produced exclusively for the online edition.

2.2.2 Newspaper ownership and the Swedish market

Market convergence in the newspaper industry concerns owner structure, mergers and cross partnerships among newspaper companies and other media companies. In this section brief background to newspaper ownership in Sweden is therefore presented.

Newspaper companies are publicistic and profit making companies. In Sweden there were in 2007 145 morning newspapers and five evening newspapers (Dagspress.se 2007). There were furthermore a number of free local newspapers, in particular in the urban regions of Sweden. Some niche content newspapers were also regarded as national newspapers. There were in 2007, 62 Swedish websites listed as online newspapers.

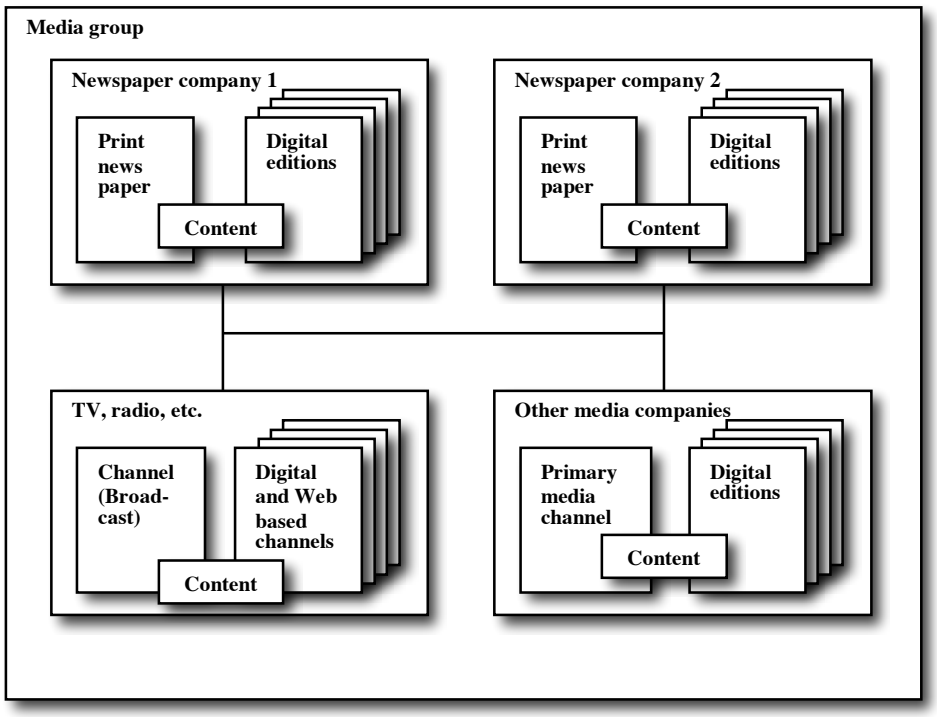

Figure 2: Conceptual overview of the newspaper company and it's products within a media group where the group has several subcompanies with other primary products and digital editions.

Two of the companies with the largest newspaper ownership in Sweden are Bonnier and Norweigan Schibsted (Sundin 2006). These media companies are both major

actors in several media channels and they own media companies not only in Scandinavia but also in other parts of Europe. The Stenbeck family is another large media player. In the newspaper business, they own the free newspaper Metro which now is an established free newspaper in many large cities all over the world. The three media companies above are all examples of family owned companies, acting on several countries with several media channels. Media companies in Europe and North America and publishers in particular, have historically been family-owned small and medium-sized enterprises (Picard 2004). However, according to Gershon and Suri Ratnadeep (2004), the situation has changed, and the 1990s will be remembered for rapid growth characterized by major mergers and leveraged buyouts.

Today, a media company focusing primarily on a certain type of publishing channel, such as a newspaper organisation, is often owned by a larger media organisation, as is the case in the USA where many newspapers are owned by dominating newspaper chains (Hadenius and Weibull 1999) with several divisions operating in more than one media industry (Meier and Trappel 2001). The traditional model of a media company still exists, however, it has become common among large media conglomerates that what were once competing organisations are now brought under the same roof (Ifra, 2002) with several media publishing channels present in the organisation (Figure 2).

2.2.3 Business models for digital newspapers

Business models are important when defining digital news services, in particular when distinguishing if the service is complementary or a stand-alone product. This section will therefore present some examples of business models used by the newspaper industry for their digital news services.

Cameron et al. (1997:16) suggest that many newspaper companies today appear to be primarily guided by what is technologically possible when developing digital news services. These authors therefore encourage newspaper companies to take a more strategic approach concerning business models for their digital news services. They describe four business models used by newspapers to justify investments in digital newspapers:

- New Subscriber Model
- Maturation Model
- Multiple Subscriber Model
- Economic Efficiency Model

The new subscriber model implies that the digital newspaper edition is targeted at new subscribers, and the edition is regarded as a self-supporting product. The maturation model aims at making new subscribers of the online edition get accustomed to subscribing to a newspaper, in order for them to later when having reached a mature life situation, sign up for subscription of the printed edition of the newspaper. The third model identified by Cameron et al. concerns multiple subscribers, a group of

subscribers having access to several papers, where content of an digital edition in their interest can be described as niche content. In the fourth model called the economic efficiency model, internal costs of the newspaper are low and the digital edition is in this case produced using existing resources of the newspaper, however repackaged, and then distributed digitally. The models suggested by Cameron et al. primarily touch what type of product the digital edition is.

A related, however more general approach to online newspaper business models can be found in the review of academic and industry resources, by Mings and White (2000) having identified four basic economic models for online newspapers:

1) The Subscription Model

2) The Advertising Model

3) The Transactional Model

4) The Bundled Model

The four models indicate that the online newspaper is financed by, 1) different types of subscription models, 2) advertisements, 3) members of an internet community exchanging information, buying and selling products, 4) partnerships between newspapers and other companies such as Internet access providers or other content providers. Mings and White claim that none of the four business models are entirely suitable for digital editions as stand-alone models, however suggest that a mix of the models will more likely be viable for the newspaper companies.

2.3 The value chain from creation to consumption of newspaper content

The process from creation to consumption of content can be described as a generalized media production value chain (Figure 3). The concept of the value chain is described by Porter (1998:315) as follows:

The value chain groups a firm's activities into several categories, distinguishing between those directly involved in producing, marketing, delivering, and supporting a product or service; those that create, source, and improve inputs and technology; and those performing overarching functions such as raising capital or overall decisionmaking. Within each of these categories appears an array of discrete activities or economic/organizational processes, at the level of field repair, inbound materials receiving and storage, billing, and reviewing and rewarding employees.

The simplified value chain used in this thesis only reflects one part of what Porter describes as the value chain. The model used here is therefore to be regarded as a "value chain metaphor " and represents the courses of events from the creation of content to its consumption in relation to the processes of convergence and technology development.

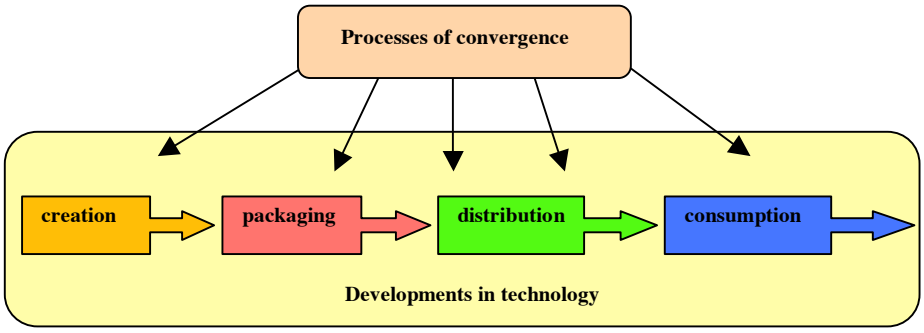

Figure 3: The value chain from creation to consumption of content in media production.

This type of value chain for content in media production have previously been described by for example Stenberg (1997) and Rosenqvist (1999), but without the relationship to convergence processes in combination with technology development.

The stages in this value chain are connected to the technology in terms of production, packaging, distribution systems, networks and devices.

The purely journalistic aspects of content creation, design and planning will not be described here since this model focuses on technological actions in the workflow.

The first stage, creation of content, is the phase where product planning takes place and the material enters the production system. Text content is typed, images and advertisements are refined, and elements such as sound clips, moving images and other digital input are collected and stored in the database of the newspaper company. The second stage is the packaging phase and is the process where material stored in the database is edited, laid out, packaged and finalized for publishing. In the third stage, the content is either digitally launched or printed and further distributed. The fourth and final stage is where the product reaches the audience and is consumed.

The value chain in Figure 3 may describe the publishing workflow of a multiple channel media company where convergence processes can be present in all stages of the value chain. In the creation stage, processes of convergence could involve reporters producing content for multiple publishing channels. Convergence in the packaging stages could imply that content produced in a channel-neutral format is packaged differently for a number of different publishing channels. Convergence processes in the distribution of content could denote the use of alternative distribution networks traditionally used for distribution of specific content such as distribution of text files over the digital audio network or the digital video network. The consumption stage could involve convergence processes if the audience decides to download content into one device, such as reading news on a PDA (Personal Digital Assistant) or collecting summaries from their favourite websites via RSS (Rich Site Summary).

A limitation of this value chain model is the absence of interaction between the readers and the other players in the chain. Interaction can be present in all stages of the value

chain depending on the service. In the creation stage, interactivity could involve dialogue content from readers such as letters, article comments or chat forums on the online edition. Interactivity in the packaging stage could involve customized printing and zoning of content or advertisements both in the printed edition and the online editions. Interactivity at the distribution stage could involve different forms of personalization and in the consumption stage imply the choices made by the audience in terms of what content to consume and when to consume it. Furthermore, commenting in chat-forums or on articles in the newspaper can also take place as an interactive event in the consumption stage. Interactivity is however a very important concept in this research and will be further discussed in section 2.6.

2.4 Multiple channel publishing and the workflow at newspaper companies

This section will clarify what in this thesis is meant by multiple channel publishing, and how this concept is related to the flow of materials at a newspaper company. Figure 4 illustrates how a multiple channel publishing newspaper company today can produce content for many different publishing channels.

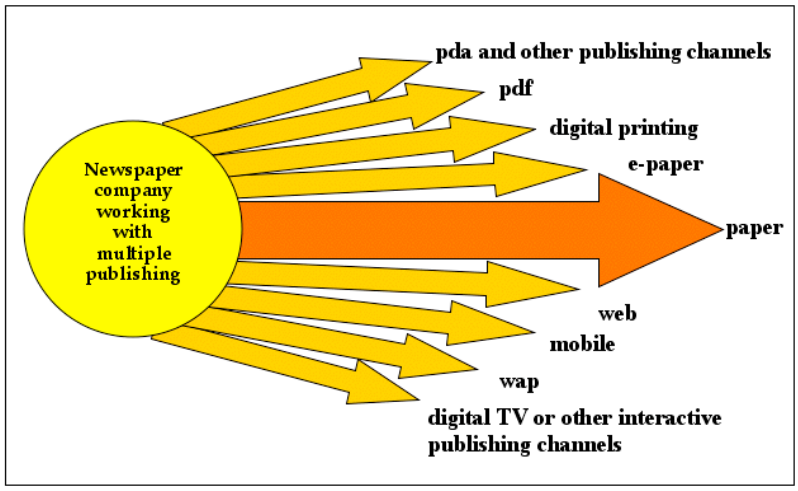

Figure 4: Different publishing channels as multiple channel publishing at a newspaper company.

Enlund (1979) discussed the workflow structure for creation of content at a multiple channel publishing newspaper company already in 1979. He pictured the newspaper as an information center and referred to an information bank for storage of content to be published. By using such an information bank or central database and a central news desk for the integration of the packaging and production processes of the content for

the different publishing channels, the newspaper companies have come closer to using the same production workflow for publishing in all channels.

The flow of materials is part of the workflow at the newspaper company. The structure of the flow of materials varies between the companies, depending much on the size of the newspaper and its available resources, software systems and number of output channels. There are two extremes of workflow types at the first stage of the value chain as seen in Figure 3: the integrated multiple channel workflow, also referred to as cross media content delivery workflow (Ifra, 2003), and the separated multiple channel workflow, where the printed and the digital editions are produced in totally separate organizations, also referred to as single workflow (Ifra, 2003). In the integrated workflow, content is produced without a specific target channel. The material is stored in a neutral format and can be used in any publishing channel after packaging the content. In the separated workflow, the different editions do not cooperate or share content; the on-line and the printed edition departments are clearly separated.

Many newspaper companies have tried or are trying to use a central news desk for all media channels in the editorial department, thus using the integrated workflow model. Representatives from the editorial sections of both the on-line and printed departments work together to produce all the different editions of the newspaper. The central news desk concept have for example been tested at the Newsplex facilities in South Carolina, USA and at large newspapers around the world (Quinn, 2002, Ifra, 2004).

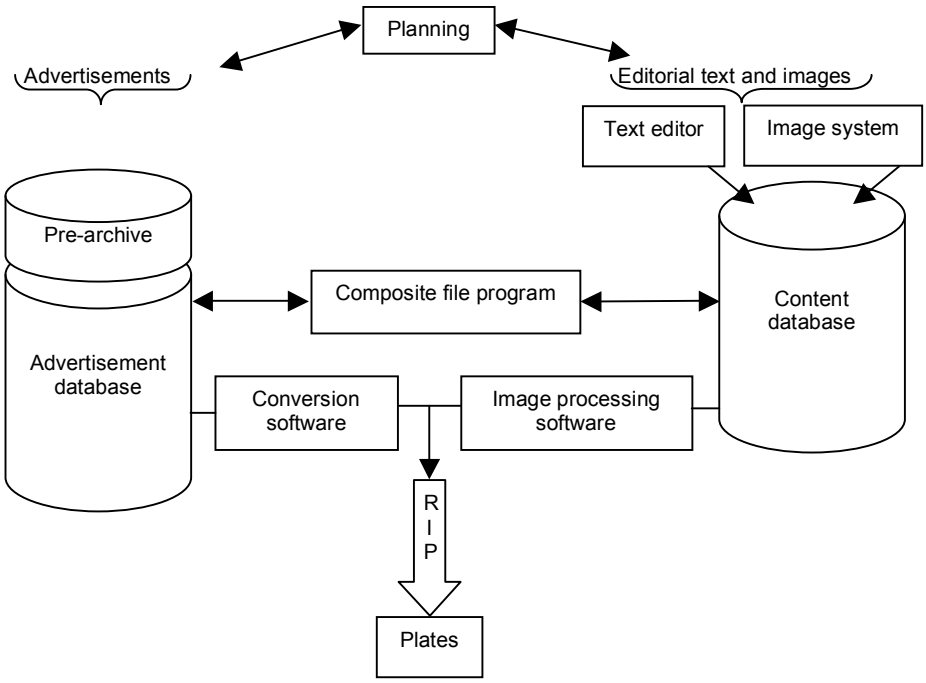

Figure 5: The general flow of material at a newspaper.

Figure 5 describes a flow of materials for today's printed edition. The flow starts with the planning process, where the number of pages and the general layout is decided. Advertisements are booked before entering the production system and placed in a pre-archive. The advertising department collects the different advertisements from the pre-archive and they are automatically controlled according to the advertisement constraints at the particular newspaper company before being stored in the advertisement database.

Editorial content is imported into the publishing system of the newspaper via text editors or automatic feeds and stored in the content database. Images are usually refined in an image system before storage. The advertisements are then placed onto the pages of the newspaper in composite file format and exported to the editorial department where editorial content is placed onto the pages. The finished pages are controlled and converted with the aid of various software programs and rasterized before the plates are made at the printing plant. The newspaper pages can either have been directly transferred to the servers after they have been finalized for rasterization or rasterized before the transfer to the servers. After the pages are transferred, the printing plant, mailroom and distributors of the printed copy have responsibility for the rest of the workflow of the newspaper production.

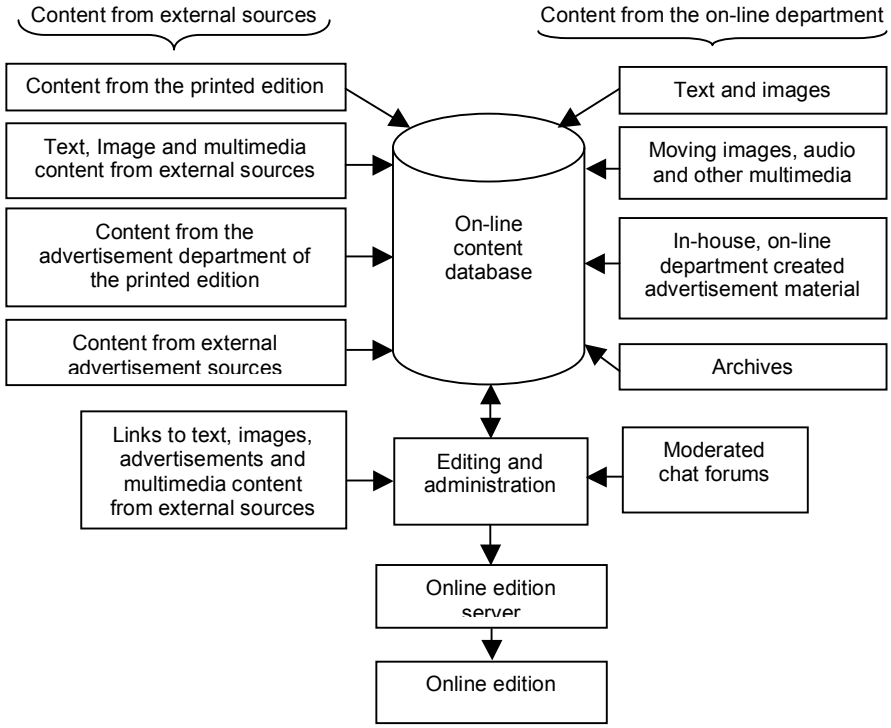

Figure 6: The generalized flow of materials for the online edition at a newspaper company where the printed edition is the primary edition.

Figure 5 describes the creation stage and the packaging stage of the value chain as seen in Figure 3 and solely describes the flow of materials for the printed edition. The planning of the digital edition is not the same as the planning of the printed edition as advertisement size and quantity does not vary in the same way. Even though content can be produced in a similar or identical way, much material is re-used from the already-printed material at some newspaper companies. The packaging stage of the value chain as seen in figure 3 is described as the finishing of the product. For printed content, it would include the processes from when the newspaper page is ready for print, is transported to the printing plant and printed. The boundaries of packaging are not as clear for digital media as they are for printed media. In 1999, Södergård et al claimed that publishing on the web is mainly a translation of traditional media. Figure 6 illustrates a general workflow for an online edition at a newspaper company, based on the workflows at the studied newspapers of this thesis.

The flow of materials in Figure 6 starts with the import of content from both the printed edition and from external sources, as well as with the creation of unique material. This unique material can later be used in the printed edition, but is usually followed by more in-depth analysis compared with the content published in the online edition. Advertisements can be created by the on-line department, but are largely imported or linked to external sources, such as national retailers of advertisements. Content is stored in the database of the on-line department, edited, administrated and published on the web site of the online edition. The online edition staff members usually moderate interactive services, such as chat forums, to prevent the publishing of unwanted statements. Furthermore, in most cases, archive and search engines were provided on the website of the online edition at the studied newspaper companies.

In the value chain seen in Figure 3, the third stage represents the distribution of media content, which can take place either physically or digitally. Physical distribution of newspapers involves the printing process and mailroom activities, as well as the carrier districts, truck routes and loading (Rehn 2001). Physical distribution of the printed edition to the readers' homes is costly for the newspaper companies. Digital distribution and digital newsprint is faster and more cost efficient compared to the physical distribution of the newspaper. The process of delivering a physical copy of the newspaper to a subscriber is a controlled and well-known process (Ifra, 2003). In the digital world, newspaper companies have however struggled to find quality solutions for delivery and electronic payment of the digital content. Convergence of networks (European Commission, 1997) has made it possible to distribute digital content over many different networks that were previously not used to transfer several types of information. The combination of networks increases the reach so that the same information can be distributed to as many readers as possible. In the next section, definitions and a historical view on digital news services distributed on a range of networks are given.

2.5 Historical digital news services

In Boczkowski's review of research on on-line newspapers, the "Telefon Hirmondó" constitutes an early example of an digital edition of a newspaper (2002). The service was produced in a similar manner as a newspaper was at the time. After the stories were produced by the newspaper staff, they were printed on paper like a newspaper, with one sheet for each part of the edition. What furthermore makes the Telefon Hirmondó an electronic newspaper according to Boczkowski is that it was distributed to the subscribers via telephone wires, with updates several times a day (Denison 1901). During the 70's and 80's, several projects were newspapers produced "tele text" and "videotex" editions for computers, flat panels, and TVs, were carried out. The newspapers were attracted to the idea of electronic distribution of the news at the time as it provided the potential end the printing and distribution aspects of newspaper production. Furthermore, digital editions could offer greater depth over printed newspapers. (Picard and Brody 1997)

Examples of digital news services reviewed in the literature, are teletext services, one example being the American Knight-Ridder's electronic teletext service (Picard and Brody 1997). Similar services were also initiated in other parts of the world such as the French initiative Télétel/Minitel (Boczkowski 2002) and the British videotex service Prestel (Fidler 1997). According to Boczkowski (2002:273), research has shown that for the electronic newspaper projects developed during the 70's and 80's, *"consumers were not highly interested in the news content, usage dropped considerably after the initial novelty wore off, most news content came from existing sources rather than being created originally for the new media and that users tended to employ interactive tools to communicate among themselves"*. Continuing with the 90's, Sylvie (2002:9) claims that it was not until the mid-1990's that the acceptance of the Internet and of personal computers made online newspapers acceptable.

Ihlström (2004) describes the evolution of content, form, functionality and the purpose of the online editions. During this evolution, the content of the online editions started with merely replicated articles from the printed editions to be content where the majority of the articles were written especially for the online edition. The form has according to Ihlström evolved from online newspapers resembling "web pages" to instead take the appearance of print newspapers using the broadsheet metaphor. The evolution of what Ihlström refers to as the functionality provided in the online newspapers, has gone from providing access of content from e-mail discussions to providing real time chat rooms on the newspaper's website to presenting the news content not only with text and images but with moving images and audio files. Ihlström claims that the purpose for the newspaper companies has shifted from using the online editions to reach readers without access to the printed edition, marketing the printed edition and publishing extra material not suitable for the printed edition, to providing a channel for continuous updates, value-added services and revenue generating services.

2.6 Interactivity

Interactivity is a concept which according to McMillan (2002) means different things to different people in different contexts. In the broadest sense, interactivity simply means a process of reciprocal influence (Pavlik, 1996:135). Rafaeli (1988:111) states that the power and attraction of the concept interactivity are in the matter-of-factness of its nature, as the common feeling is that interactivity, like news is something you know when you see it. Rafaeli, defines the interactivity as:

.. an expression of the extent that in a given series of communication exchanges, any third (or later) transmission (or message) is related to the degree to which previous exchanges referred to even earlier transmissions.

McMillan (2002) has identified three main traditions of interactivity: user-to-user interaction focusing on human communication; user-to-document interactivity focusing on perceived interaction with content creators and actual creation of content such as the ways that active audiences interpret and use mass media messages, active navigation of websites and active participation in creation of interactive fiction; and user-to-system interactivity focusing on the interaction between people and the media system such as the computer, all in the context of "new" as well as "old" media. Furthermore, McMillan claims that these three traditions tend to overlap.

Bruhn Jensen (2005) states that interactivity concerning media has come to refer more broadly to the process by which a human operates a computer in a sequentially structured manner. Furthermore, Bruhn Jensen has detected a shift concerning focus for the meaning of the word interactivity, going from collaboration, to communication between collaborators. The interactive and digital nature of computer-mediated communication results according to Cover (2006) in blurring the line between author and audience.

For digital newspapers, the simplest form of interactivity concerns the action of the consumer clicking on provided links. This is by Bruhn Jensen denoted as a form of selectivity, as users make selections from a preprogrammed range of options so as to make the session proceed. The more advanced interactivity with an immediate result or feedback from the newspaper company are for example when the users themselves comment on articles, or contribute with their own content such as uploading photographic images, moving images and sounds. This type of interactivity was denoted by McMillan (2002) as user-to-document interactivity. Similar as with the concept of convergence, I will return to the concept of interactivity in the discussion section of the thesis.

2.7 Consumption of newspaper services

The last stage in the value chain as seen in Figure 3 is the consumption of the content. The consumers or readers of newspapers have traditionally been considered as those reading the printed edition. Today, as newspapers produce editions for a number of publishing channels, newspaper readers might not always be readers of the printed

edition. As suggested by Ihlström (2004b), national newspapers have gained a new type of audience, non-readers of the printed edition. Hedman et al (2005), argue that there is a segmentation of the audience between different publishing channels and media. The audience has, according to these researchers, limited time and money to spend on media consumption and neither can nor wants to increase their consumption as new media channels emerge.

According to statistics from the Swedish Newspaper Publishers' Association (2007), 76% of the Swedish population between the ages of 15 and 79 read a morning newspaper on the average day from the 3.9 million copies a day that constitute the Swedish daily newspaper circulation. There were 121 Swedish online editions of newspapers and magazines in 2006 (Tidningsutgivarna, 2007). However, only 16% of the part of the population that used the Internet in 2005 read an online edition of a newspaper on the average day (Nordicom 2006).

These statistics can be compared with statistics from 1985, when 84% of the population read at least one morning newspaper every day with an average time of 31 minutes per day. In 1998, the same type of statistics showed that 83% read at least one printed newspaper every day and the average time spent reading the printed newspaper was 30 minutes. In 1998, the 41% of the population that used the Internet had read the online edition of *Aftonbladet*, the largest Swedish evening newspaper and the largest on-line newspaper in Sweden. (Carlsson, 1999)

Comparing the statistics from 1998 and 1985 with the statistics from 2003 would thus imply that the consumption of newspapers has decreased regarding the time spent reading a newspaper. However, the number of people that read at least one newspaper everyday has increased. This change can be due to newspapers with fewer pages and/or the introduction of free newspapers, to name only a couple of factors that can influence the statistics. Nevertheless, media consumption has changed since 1985. Even though total readership of morning newspapers in Sweden is still high in most segments Swedish newspaper companies seem to be worried about loosing readers (Cepaite 2006), particularly younger groups of readers, to other newspapers or other media competitors. The media use of younger groups of the Swedish population will therefore be further discussed in chapter 5.

3 Methodology

The choices researchers make about cases to study, methods of data gathering, forms of analysis in planning and executing a research study are by Silverman (2005:99) defined as methodology. This thesis focuses on the newspaper industry as the primary case of study and it uses multiple methods to find answers to the research questions.

In this thesis, I use the term crossdisciplinarity as an umbrella term for research performed in between and across several research disciplines. Other terms describing somewhat the same phenomenon exists, such as for example transdisciplinarity, interdisciplinarity and multidisciplinarity, and are used depending on language, country and also on the author's research discipline. Sandström et al. (2005) define interdisciplinary research as integrated cooperation between two or more research disciplines with the goal to form a new research field or discipline, and multi-disciplinary research as cooperation between different disciplines where the cooperation does not intend to form a new discipline and where the participants in the cooperation split after finishing the cooperation. Sandström et al. claim that these terms are commonly used when describing research from the standpoint of the financiers of research. They therefore point out that it is difficult to use these terms when describing research from the researchers perspective, as is done here. Sandström et al. believe that it is almost unrealistic that one individual can perform research crossdisciplinary on their own. I will however, argue that the individual crossdisciplinary researcher exists.

This chapter will address the methodology used in the thesis and it will start with discussing the crossdisciplinary nature of the research, followed by a description of the selected case study research strategy. The research methods used in the included papers will then be presented. This chapter ends with a review discussing the advantages and shortcomings of the selected methodology.

3.1 Crossdisciplinarity

The research in this thesis is of a crossdisciplinary nature using multiple methods. It is grounded in the area of media technology but also touches sociology, humanities and economics. The methodology for this research consists of both qualitative and quantitative methods and involves the choice of the newspaper industry as the primary case of study.

A media technology researcher uses engineering problem solving methods while focusing on communication processes (Enlund 2003). Enlund (2003:77) further defines the research discipline media technology as "technology and methods for supporting human communication over distance in time and space". The activities of an engineer are diversified and can range form the role of a pure scientist to that of sales and applications, however common for all engineers is the philosophy of approach which involves a strong scientific base in order to break a complex problem

into smaller manageable units which then is represented by an approximate model of the real situation (Shaw 2001).

My PhD project has shifted over the years from a technological focus on digital news services, to investigating consumer behaviour and usage of digital news services. In order to be able to find answers to my research questions, I have therefore used a mixture of research methods both qualitative and quantitative. This way of combining methodologies can, as earlier mentioned, be denoted as "complementarity" where several different methodologies may be best suited to examine different aspects of a research question joint together in a common theoretical framework (Bruhn Jensen 2002:272, McLaughlin et al. 2001). Other research methods related to complementarity are grounded theory (e.g. Glaser and Strauss 1967) and triangulation. The grounded theory approach has not been used, as the goal of the researcher using grounded theory is to formulate a theory about the studied phenomena (Bruhn Jensen 2002). To formulate a theory has not been a goal for me, and requires a substantial amount of empirical evidence for hypothesis testing. According to Bruhn Jensen (2002) the general approach of triangulation, is used to gain several perspectives on the same phenomenon (Bruhn Jensen 2002), which is not fully applicable on this research.

3.2 The case studies research strategy

One approach when deciding on which research strategy to use, is to look closely at the research questions. Yin (1994) suggests five research strategies: experiment, survey, archival analysis, history and case studies in relation to research questions such as: how, why, what, where, who, how many and how much. In Table 1, the five strategies are described depending on the type of research question, control over behavioural events and focus of contemporary events.

Table 1: Relevant situations for different research strategies (Yin, 1994:6).

Strategy	**Form of research question**	**Requires control over behavioural events?**	**Focuses on contemporary events?**
Experiment	How, why	Yes	Yes
Survey	Who, what, where, how many, how much	No	Yes
Archival analysis	Who, what, where, how many, how much	No	Yes/no
History	How, why	No	No
Case study	How, why	No	Yes

Since the research questions for this thesis are mainly of the ”how”, ”why” and “what” type, the preferred methods to use would according to Table 1 be experiments, surveys, histories and case studies. However, the research questions focus mainly on a contemporary set of events over which the investigator has little control. This would thus exclude experiments, archival analysis and histories, and as a result, the methods most suitable according to Yin (1994) are: surveys and case studies.

Surveys usually belong to the quantitative research methods and will be described in section 3.3.4. Case studies can consist of several sub methods both quantitative and qualitative. Yin (1994:13) defines case studies in the following manner:

A case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident.

Yin (1994:78) further acknowledges that evidence for case studies may come from documents, archival records, interviews, direct observation, participant-observation and physical artefacts. Scholz and Tietje (2002) also state that in principle, each case study should use multiple sources of information. Figure 7, adapted from Scholz and Tietje (2002:14), illustrates the use of multiple sources of data and evidence for the case studies carried out for this thesis. In the research for this thesis, several newspaper companies and services have been investigated, thus a number of units have been analysed.

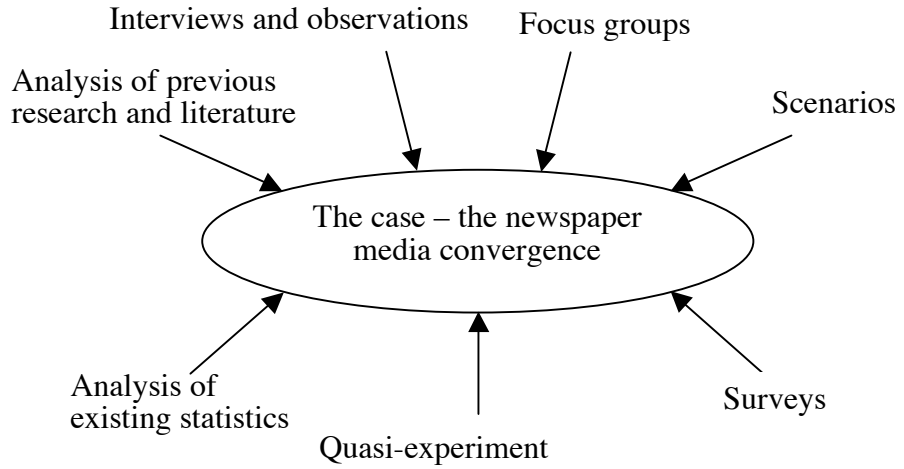

Figure 7: The use of multiple methods to find answers to the research questions for the research in this thesis. Adapted from an illustration by Scholz and Tietje (2002:14) showing the use of multiple sources of data and evidence in a case analysis.

3.3 Methods

The qualitative methods used for the research in this thesis have been interviews, observations, focus groups and diary studies. These methods were chosen to explain the similarities, differences and challenges of the production workflow for multiple publishing channels at several different publishing companies. Furthermore, qualitative methods were selected to point out the specific trends, common strategies or successful moves and ventures unique to each publishing company since the companies are difficult to compare on a more general basis. Qualitative methods were also chosen to get deeper knowledge on the audience attitudes and views on digital news channels. Among the characteristics of qualitative research is that the research takes place in the natural setting, employs multiple methods of data collection and a strategy of inquiry, and is based on the interpretations of the researcher. The qualitative methods used indicate that the findings are presented in a descriptive manner focusing on the occurring process as well as the product or outcome. (Creswell, 2003)

3.3.1 Interviews and observations

The research interview distinguishes itself from an ordinary conversation mainly due to that in the interview the researcher is in control over the situation. Furthermore, the research interview is theme oriented, and the topic of the interview is introduced by the researcher, who also critically follows up on the answers given by the respondent(s) (Kvale 1996). The qualitative research interview is according to Kvale, semi-structured, as it is neither an open conversation nor a highly structured questionnaire.

According to Rosengren and Arvidson (2002) observing a social phenomenon gives the researcher a possibility to record this event in its purest form, as it is happening in front of the researcher's eyes. Participant observation means that the researcher gathers data by watching and listening to different players in the field setting, when these are interacting, expressing opinions or taking part in actions (Grønmo 2006).

3.3.2 Experiments and quasi-experiments

Gunter (2002:223-225) mentions experiments with a factorial design as experiments common in media research. In such experiments the researcher creates a situation where individuals are asked questions about how they were affected, after having been exposed to some form of media stimuli. In such a case, several independent variables will be tested.

There are several types of quasi-experiments and these are similar to experiments except for that there is no random assignment of the control group in the experiment.

3.3.3 Focus groups

According to Lunt and Livingstone (1996:3) focus groups are particularly useful when researchers seek to discover participants' ways of understanding phenomenon. They generate discussion, and they reveal the meanings surrounding an issue. Stewart et al. (2006:132) claim that there is no best approach for focus groups, but that they should be carried out and analyzed in a consistent manner with the original purpose of the research and the information needs that gave rise to it. The research technique focus groups are defined by Morgan (1996:130) as:

".. a research technique that collects data through group interaction on a topic determined by the researcher."

Within this context Morgan (ibid) emphasizes that central to this technique is the data collection, that the interaction takes place in a group setting and that the researcher has an active role in creating this group discussion for the data collection purposes. Focus groups can be compared to interviews, however in a focus group, the participants are not only being interviewed by the researcher, they are also querying each other and explaining themselves to each other (Morgan 1996). The most common analyses of focus group data involves a transcript of the focus group and a summary from which conclusion can be drawn from (Stewart et al. 2006). Stewart et al. also describe that in most focus groups, the samples are small and imperfectly representative of a larger population, and it is therefore an option to view each individual as representing a particular demographic, lifestyle or attitudinal segment.

3.3.4 Surveys and statistics

Surveys are used to collect data from respondents. The refinements of these data are referred to as statistics. Weiss (2005) states that there are two major types of statistics, descriptive and inferential. The research in this thesis which deals with data from Internet based survey has used descriptive statistics. Descriptive statistics consist of methods for organizing and summarizing information in graphs, charts and tables. Descriptive measures are averages, variation and percentiles. The methods of inferential statistics concern drawing and measuring the reliability of conclusions about a population based on information obtained from a sample of the population.

According to Solomon (2001) the popularity of Internet based surveys is growing continuously as they reduce time and cost compared to traditional phone or mail based surveys. Statistical surveys usually consist of four parts: planning, data collection, analysis and presentation (Blom 1989). Response rates for Internet based surveys tend however to be lower than for the traditional survey methods. Those who do not respond to a survey contributes to the non-response bias of the survey. However, the severity of the non-response rate bias can be reduced by comparing the results from the survey to known values in the population. (Grossnickle 2001)

3.3.5 Future studies and scenarios

The use of scenarios was established in Sweden in the 1960's and was mostly used in mathematical research, political and defence planning. As preparation for constructing scenarios, experts make background studies of the problem area. Scenarios thus function as a way to communicate knowledge between experts and to synthesize it. (Schwarz et al. 1982)

Scenarios and trend extrapolations are both methods of futures studies. The study of the future often involves the design of alternative futures (Schwarz et al. 1982). According to Schwarz et al. (ibid), there was a movement at the early start of future studies against predicting the future based on past trends and against the usage of the so-called trend extrapolations. Trend extrapolations are nevertheless used to predict the future when forecasting a trend that is quantifiable and possible to extrapolate. Future studies can, in contrast to trend extrapolations, be used to predict the events of larger complex problems.

Kahn and Wiener (1967 p. 6) describe scenarios as:

Hypothetical sequences of events constructed for the purpose of focusing attention on causal processes and decision-points. They answer two kinds of questions: (1) Precisely how might some hypothetical situation come about, step by step? And (2) what alternatives exist, for each actor, at each step, for preventing, diverting, or facilitating the process?

3.4 Methods used in the included papers

The methods chosen to investigate the research questions of paper I-III were qualitative methods, such as case studies including semi-structured interviews and observations Scenarios and models were created based on these case studies in combination with literature studies. In paper IV-VI qualitative methods were used in combination with a quantitative survey. The results presented in chapter 5 are based on a quasi-experiment, which can be denoted as quantitative, and qualitative focus groups. This section continues with a brief explanation of what methods were used in each of the papers included in this thesis and chapter 5.

Paper I is a theoretical study on the concept of convergence in media based on literature from the years 1979 until 2004. Different models have been presented in the paper; some are theoretical macro models, some static and some dynamic depending on the importance of the time factor.

The chosen methods for Papers II and III have been case studies. Paper II consists of multiple case studies of newspaper, television and broadcast companies and discusses a number of alternative ways for a newspaper company to work with moving images. Paper III is based on three embedded case studies where several levels of the organisation at each newspaper company have been studied. Furthermore, paper III presents a number of scenarios. Scenarios were selected because of their ability to show workflows that are not yet in use today. For papers II-III representatives from a

total of nine Swedish newspaper companies have been interviewed. Some of these representatives have been interviewed at several occasions during the time-span of this research. When the interviews took place at the companies they were in most cases also combined with observations. This has been a natural way exploring the organization and the technological systems used further, as well as giving admission to finding out more about how the employees use the systems. The observations carried out at the companies have therefore been of a participant observation type, thus including direct observation and informal interviews and have taken place directly before or after the semi-structured interviews.

Papers IV-VI focus on how users spend time with the media, how they consume and have adopted digital newspaper services and what they perceive new media to be. These three papers are mainly based on data from an extensive survey carried out in spring 2006. As the study focuses on opinions of early users of the news services, using a sample consisting of so called early adopters or early majority were of interest. According to Rogers (2003) these can for example to a high extent be found among groups of highly educated people. The survey was conducted using a sample of students from the Media Technology program at the Royal Institute of Technology, Stockholm, Sweden. The data was mainly analyzed with descriptive measures or qualitatively as the majority of the survey questions were open-ended.

Paper VII, which contains results that are not published elsewhere than in this thesis is based on a study carried out in early spring 2007. This study explores user opinions in terms of perceived value of three digital news services; web TV, podcasting and news blogs. The research design of this study was a quasi-experimental design and the data was collected with the use of diary studies, focus groups and individual interviews. In the initial stages of the study, the web sites of the major Swedish national newspapers were thoroughly analysed by the researcher. This was done in order to map extra content services provided by the newspaper companies. The three selected services for this study where web TV, podcasts, and blogs as they were among the most frequent extra services available on the national newspaper websites.

The content analysis for paper VII of the collected data focused on detecting driving forces for using digital news services and incentives for people to start using the services. Furthermore, analysis of available national statistics and a review of literature on news media usage and perceived value of digital news services have been carried out.

In the study presented in paper VII, a quasi-experiment was used. The participants of the study were, every day for one week subjected to different pre-chosen media stimuli. They were then asked to fill out a diary reflecting how they reacted. A pre-test group were used and then three groups took part in the study, which was carried out during three different weeks during March and April, 2007.

The methods used in the included papers will be further reviewed in section 6.4 in the discussion chapter of the thesis.

4. Results from the included papers

4.1 Paper I: Convergence and Divergence in Media – Different Perspectives

The aim of the paper is to find what general definitions there are of the concept of convergence in media and the paper serves as a review of the existing models for media convergence from the early 1970's to 2004. No standard definition of the concept existed at the time this paper was written, however, numerous attempts at a single definition were found.

The concept of convergence is used in a number of academic fields with the meaning varying between the disciplines. One example of a definition of convergence from a discipline other than media is the biological definition. For a biologist, convergence signifies how similar biological structures have been developing from separate sources of origin. These convergence processes are never completed; the organism's original heritage is always preserved in some form.

In media research, MIT researcher, Nicholas Negroponte was one of the early introducers of the concept of convergence.

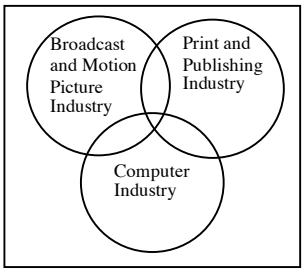

Figure 8: Negroponte's circles describing the MIT Media Lab's construct of convergence (Fidler, 1997).

He presented a convergence model based on three intersecting circles representing three media industries coming together (Figure 8).

Convergence was considered the driving force behind developments in telecommunications, media and information technologies in the 1990s. The European Union presented their view on convergence in 1997, and in 2001, the Swedish Government Commission suggested that convergence consisted of four areas: services, electronic appliances, networks and market convergence (SOU 1999:55, 1999).

Newsroom convergence is yet another convergence area. The convergence in the newsroom deals with media content production and has been explored at the Newsplex facilities in the USA (Quinn, 2002). Convergence in content production involves processes taking place within editorial departments, in editorial system technologies and for the professional role of the reporters. One example of a model of newsroom convergence can be seen in Figure 9 and was published in the summer of 2003.

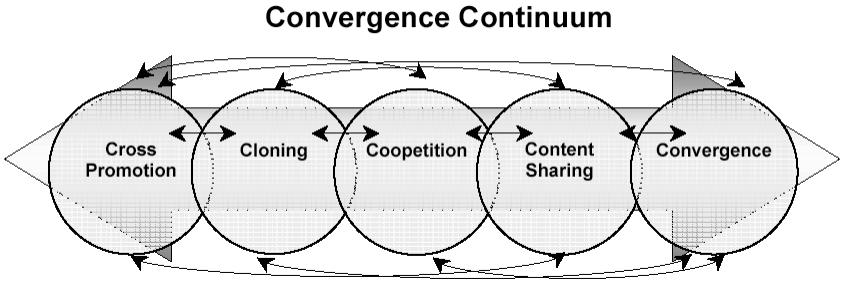

Figure 9: The convergence continuum (Dailey et al, 2003).

The paper refers to the confusion in defining convergence since the concept is applied to several different contexts. In addition to the academic models, several non-academic convergence models flourish, usually defining convergence of devices.

Alongside convergence are the processes of divergence. The concept can be seen as contradictory to convergence, but can also appear simultaneously depending on the reference frame. Enlund and Lindskog (2000) explain how the widening range of information created by services containing interactive elements or services focusing on niche publishing from a consumer perspective encourages divergence. However, from a technology perspective that does not include the content, the technology, services and production workflow behind the content are converging.

Technology developers can influence whether a device, service or usage trend will be influenced by processes of convergence or by divergence. The paper suggests that the electronic newspaper can be one of the devices possible to influence.

Media convergence during the 1990s mainly concerned networks and services in data, broadcasting and telecom industries. At the beginning of the 21st century, convergence was mainly described as several more or less interacting processes occurring in different fields. Recently, convergence has mainly been regarded as a niche concept to describe developments of new technology with different connotations and meanings depending on which niche it is describing.

The paper concludes that media convergence is an ongoing process often appearing together with its opposite, divergence. Furthermore, divergence can appear as a result of convergence. The effects of convergence are visible, measurable and possible to detect, while the actual process might not be. The paper suggests that it might be more

interesting to study the effects of convergence rather than the process itself. The results of the processes of convergence shape the media companies, change their products and thus affect our society.

4.2 Paper II: Evaluating Digital TV as a Publishing Channel for Newspapers

Web TV and Digital TV (DTV) are presented in the second paper as two examples of convergence of technology, services and content based on a study carried out during 2002. The aim of the paper is to give a wide perspective of the DTV and web TV markets focusing on the advantages moving images could offer to a newspaper company. The research questions behind the paper were: In what ways can a newspaper company produce moving image content? What moving image services are suitable for newspapers?

The paper suggests that the competition for the newspaper companies has become tougher not only as newspapers, but now also as other types of media channels compete in the same field. Venturing into a service broadcast over the DTV net or over the Internet could therefore offer new possibilities for the newspaper companies. The morning newspapers could combine text with moving images, audio and live broadcasts, reach an audience larger than their current subscribers and offer the same entertainment value as that published in the evening newspapers. Furthermore, DTV and web TV could enable interactive possibilities by making two-way communication with the audience possible.

The two main moving image types discussed in the paper are broadcast television and web TV. The three major forms of digital broadcast TV in Sweden discussed in the paper are Digital Terrestrial Television, Digital Cable Television and Digital Satellite Television. As seen from the consumers' point of view, the choice of broadcasting form is not only a technical issue but also one concerning residential areas and availability of TV channels.

Three TV companies were studied and their strategies regarding DTV mainly involved strengthening brands through cross-promotion and cooperation with technology providers, which would lowers the costs for ventures into new services. Additionally, three newspaper companies experienced in working with moving images were interviewed. The newspaper companies' main aim with the moving image ventures was to retain their news publishing position in the future with the aid of this type of multiple channel publishing. The moving image services offered by the newspapers are often regarded as test-projects and it has therefore been necessary to keep expenses low.

The return channel for DTV is not always provided through the broadcasting net and some of the interviewed TV companies or newspapers have tried to encourage the audience to interact with the services via SMS. Different devices were then used in combination to create interactivity. Some of the interviewed TV companies and

newspapers have successfully tried to cooperate with other partners regarding niche services such as business news or home furnishing.

A number of operators of digital TV broadcasting nets were also interviewed in the study. Their main reason to convert to DTV was to cut distribution costs when broadcasting digitally. Many of the operators control the value chain from distribution to the customer, thus maintaining contact with the customers.

At the time of the study, the analogue TV broadcasting net was still in use. Since there at this point in time was no digital distribution net currently available in Sweden coverning the entire country, TV companies were forced to broadcast over several distribution nets. Furthermore, the telecommunication and broadcasting companies have developed proprietary platforms for interactive services making it necessary for the companies to program their interactive DTV services in several formats depending on the distributor. The interactive services can be divided into local and central interactivity. Local interactivity implies that the entire service is downloaded into the viewer's set-top box and no data is returned after the downloading process is completed. Central interactivity means that the operator of the distribution net receives information back from the viewer. A central interactive service is True Video On Demand. This expensive form of interactivity means a unique two-way communication between the operator and the viewer and is commonly substituted for Near Video On Demand. However, Near Video On Demand implies that programs and services are broadcast to all the viewers even though only those who are supposed to get the information can decrypt the broadcast data in their set-top-boxes.

This paper concludes that the text format in the TV medium is ideal for newspapers. The paper suggests that newspapers could either work with web TV or text-based TV services. One way to start is to adapt the existing content to the TV medium and establish a relationship with existing TV companies to acquire further knowledge. A newspaper company could for example cooperate directly with the operators, creating text-based services such as an EPG (Electronic Program Guide) or other portal services. Other suggestions are made, however, they are more costly for a newspaper company. It could therefore be preferable to cooperate with existing actors on the market when entering the area of moving images in order to gain knowledge for future ventures.

4.3 Paper III: E-paper Production Workflow – Adapting Production Workflow Processes for Digital Newsprint

The third paper describes electronic paper (e-paper) as one example of a publishing channel in the paper denoted as digital newsprint. The research questions behind the paper were:

What is e-paper technology? What news services can be associated with e-paper technology? How can a newspaper company work with a future e-paper channel in their existing production workflow?

The paper is based on case studies of three mid-sized regional Swedish newspapers with previous experience working with PDF editions and focuses on e-paper services as extensions of printed editions. Based on the case studies, three production workflow scenarios for working with electronic paper at newspaper companies were suggested.

The definitions of e-paper and its services introduced in the paper are defined from the perspective of the newspaper companies. Digital newsprint is defined as a form of digital distribution of content originally based on the content for the printed edition. There are e-paper devices or terminals and there are services designed for use in e-paper devices. When the term e-paper is used without a qualifier, it is defined as the entire field of e-paper, including both devices and services. The services for e-paper can be seen as a crossbreed between the traditional paper edition and an online edition.

E-paper is intended for reading in a similar manner as reading on traditional paper, but has the possibility for updates and interactivity. The terminals are designed to be portable and to consume a minimum of electrical power. The display of the terminals generally consists of a screen with electronic ink wrapped in a covering shell. The electronic ink in an e-paper device consists of a grid with tiny cells, forming pixels on a display. These cells contain charged particles that are affected by the electric field caused by printed plastic electronic circuits in the backplane of the e-paper terminal. Depending on the manufacturer or solution, the cells can contain charged coloured particles or oil and water in combination with a coloured backplane or filters.

The first prototypes of e-paper devices were small, no larger than an A5 page and with few or non-existent interactive possibilities. According to market research made by e-paper manufacturer Philips and Swedish morning newspaper *Sydsvenska Dagbladet* in 2003, users regarded such e-paper terminals as yet another gadget with nothing new to offer. Since the technologies for e-paper were under development, technological solutions such as what distribution forms to use were still possible to influence. A combination of distribution forms were suggested for updating the terminal, such as IP (Internet Protocol), 3G (Third Generation mobile telephone technology), DAB (Digital Audio Broadcasting) or DVB (Digital Video Broadcasting). (Liljestrand, 2003)

According to the case studies, newspaper companies working with multiple channel publishing aim to produce content for the different publishing channels as automated as possible. This is important to cut costs and the three studied newspapers have presented somewhat different strategies concerning how they will work with the e-paper product. These strategies involve creating an e-paper product identical to the printed edition, tailoring the material specifically for the product or using it as an extension of the online edition.

The three scenarios presented in the paper are based on state-of-the-art editorial technology and organizational structure at the newspaper companies. The organizational production workflows at the studied companies are somewhere between a separated and an integrated workflow, since the digital edition workflow is partly separated from the workflow of the primary product, the printed edition of the newspaper.

Since an e-paper edition will require resources from the newspaper company, keeping expenses low is often first priority; therefore, the first scenario suggests a fully automated workflow with no need of editors working specifically with the edition. If the existing production workflow at a newspaper company cannot be easily adapted to an automated process, the second scenario of depending on dedicated resources working full-time with the e-paper edition could be preferable. The third scenario suggests that the e-paper edition is created on the fly whenever a user requests the latest available news or e-paper edition. This scenario requires a large degree of automation and that the material can be stored in standard formats.

The paper concludes that the e-paper edition could be regarded as a crossbreed between the online and the printed edition, with the advantages of an digital edition and a workflow similar to traditional newsprint. A future e-paper product could, with the right technology, offer such advantages to the newspaper companies as new business models, enhanced advertisements formats, moving images, personalization and interactive services.

One crucial factor when introducing e-paper on the market is the intended target groups. In the first phase of introduction of e-paper, the suggested target groups are:

- emigrants
- people living in sparsely populated areas
- roaming readers
- people preferring to read an online edition of a newspaper rather than the printed edition.

The main challenges to overcome when starting to work with e-paper editions at newspaper companies are: selection of material suitable for the product, automated scaling of editorial and advertisement material, handling of high resolution graphics, pagination, copyright issues, editioned pages, layout aspects, human resources, distribution and promotion of the e-paper edition.

The findings of the paper are presented as a most likely scenario based on the three scenarios presented earlier in the paper. Furthermore, the paper discusses that the near future e-paper product could be a complement to traditional paper rather than a threat to the printed edition.

4.4 Paper IV: Adoption of interactive media news services among young people

The fourth paper explores adoption of interactive media news services among young people in Stockholm, Sweden. The aim of the paper was to investigate adoption of new interactive media news services. The services discussed in the paper were online newspapers, web TV, podcasts, blogs and these were chosen because of their different level of interactive and personalization possibilities.

The research questions behind the paper were:

What do the participants of the study perceive as new media? What kind of media user do the participants consider themselves to be? How early did they start using online editions of newspapers, web TV, podcasts and blogs?

In Rogers' theories on diffusion of innovations, using the S-curve and adoption categories to describe the rate of adoption for innovations in a social system, communication channels constitute one of the dependent variables for the diffusion process to take place (Rogers, 2003). The S-curve and the five adopter categories; innovators, early adopters, early majority, late majority and laggards constitute one of several highly accepted theories in research and trend reports predicting the rate of adoption of new media technology.

In the paper, in order to investigate adoption and use of four selected new media services, a survey was performed focusing on the four new media news services: on-line news editions, web TV, news podcasting and news blogs. The sample of the survey consisted of Media Technology students at the Royal Institute of Technology in Stockholm, Sweden, aged from 19-34 years old. The selected services are in some form all used for news content distribution and have to a certain extent been proposed to be competitors to the traditional news media, such as the printed newspaper. The adoption of the new media services is to be considered from a meta perspective as services analyzed are to some extent the same communication channels used in the diffusion process for spreading information about their own existence.

The paper gives a brief background to the four analyzed new media services and presents definitions used as follows:

- On-line newspapers were defined as daily and evening newspapers available on the Internet.
- Web-TV was defined as moving photographic images available at websites such as on-line newspapers.
- Podcasting was defined as several forms of subscriptions for audio files for automatic downloading to handheld devices such as mp3-players, hand held computers and mobile phones. Video files were excluded from the definition although it is currently often included in general definitions of podcasting.
- Blogs were defined as web pages, containing either text, images or audio content, presented as entries or so called posts written or created by the owner or several owners of the blog.

The majority of the respondents believe they are in the early adopter category (36%) or the early majority category (39%). 20% of the respondents considered themselves to be in the late majority when adopting new media, 1 % in the innovator category and 2 % in the laggard category.

42 % of the respondents did not listen to radio at all on the average day. Only 5 % listened for two hours or more. The extremes concerning TV watching were that 8 % did not watch TV at all, while the other extreme, 2 % watched TV more than 400

minutes a day. 41% indicated that they never read a morning newspaper and about 3% said they read morning newspapers for 60 minutes on an average day. The majority of the respondents use the Internet at least for one hour up to four hours a day.

On the average day, when the respondents have access to a computer, the majority responded that they visited an on-line newspaper at least a few times a day. Only 6% responded that they watch web-TV at least once a day while 31% stated that they never watch web-TV. 77% responded that they never use podcasting services. Of those that do use podcasting services this occurs only a few times a year. 21% of the respondents are keeping or have previously kept a blog of their own. Of these, 25 % updated their blog a few times a week.

The paper also investigated adoption of the selected services among the respondents. The majority of the respondents answered that they visited an on-line newspaper some time during the end of the 90's. Notable concerning regular visits to online newspapers were that 8 % of the respondents still do not visit on-line newspapers on a regular basis. While 14 % started visit on-line newspapers regularly already in 2002. Of those that responded they do not read on-line newspapers on a regular basis (7 %), the main reason was that they prefer to read the printed edition. These respondents further indicated that they would start reading on-line newspapers regularly if the on-line newspapers were easier to navigate, had less copy-and-paste material from the printed edition, or if they started having breakfast in front of their computer.

Only 44 of the respondents indicated that they have watched web-TV, of these, 14% watched web-TV for the first time during the year 2004, and one percent as early as 1998. 17 % watch web TV on a regular basis and most of them started watching around year 2005. Concerning the adoption of podcasting services, only 8 respondents chose to answer. These respondents indicated that they first used a podcasting service in the year of 2005 or 2006. The same respondents indicated that they started subscribing at the same time as they tried the service, during the years 2005 and 2006. Most of the respondents stated that they started to visit blogs regularly in 2005. The respondents that do not read blogs on a regular basis, were asked about why they do not read blogs and what could make them start to read blogs.

Comparing the answers from the sample of the survey, to the corresponding statistics of the Swedish population shows that there are slight differences in terms of media usage on the average day.

Surprisingly, for the investigated services, few of the respondents indicated that they watch web TV, subscribe to podcasts or read blogs. Even though the students are highly interested in media technology, many of them are still not users of the investigated technologies. The main reason for this as was stated in the comments made by the respondents had to do with that they cannot yet afford to invest in the technology needed, the quality of the services or the content is too low and that the content does not interest them enough.

4.5 Paper V: Interactive news services – competitors to printed media

The objectives of paper V were to investigate whether the interactive aspects of new digital news media services are the core of the potential threat to the printed edition and to discuss the newness of new media forms such as interactive news services. New media or contemporary new media are seldom completely "new" but rather combining characteristics of old media. In non-scientific press, a concept of "new new media" has recently been introduced, as there now is a "second generation" of new media.

This paper was based on one part of the extensive survey performed in spring 2006, also used in papers IV and VI. The survey questions were of an exploratory nature and the area is of interdisciplinary nature in lack of methods for studying and comparing the phenomenon, the results have to be regarded as preliminary and serve more as contribution to discussion and inspiration for further research.

The paper states that researchers, as well as industry representatives have ever since on-line newspaper editions were introduced on the market discussed them in terms of potential threats or as complements to the printed editions of the newspapers. As new digital editions of the newspapers continuously have been launched on the market, the threat to the printed edition may have increased further. The paper focuses on the four digital news media services: online edition, web TV news services, news podcasting services and news blogs as these four services all are denoted as new media by the newspaper companies and furthermore contain elements of interactivity.

The results from the survey, presented in the paper concerns the newness of what is denoted as "new media". 21 % of the respondents stated that on-line newspapers are new media, 59 % web TV, 73 % podcasting, 50 % blogs, and 10 % did not consider any of the listed four media types to be new media. Furthermore, the respondents were asked about the importance of interactivity in the four services where the majority did not find interactivity important.

The paper points out that the positive promotion of the newspaper companies digital editions send a clear message of that this way of consuming media is the one recommended, the most important. The newness of new media is questioned and the paper states that what instead is new with the media, is perhaps not for example the interactive aspects of new media, but the way the media companies positions themselves in relation to their audiences. And, as online newspapers now have turned into an established medium they are competing with other established media. As newspaper companies are constantly experimenting with new media services, labeling them as test projects, thus indicating that these services are small-scale, non profit services, they are not to be considered as threatening to the printed editon. However, as soon as the status has changed from "test project", to "new media" to "media", the paper states that naturally, the threat is increasing.

The study shows that the interactive services in the digital services analyzed are not in themselves a threat to the printed edition. The paper stresses that the most important question might not be about the future of the printed edition, but the question of what a newspaper will be in the future in terms of its function, market and audience.

4.6 Paper VI: Perceived Simultaneous Consumption of Media Content Services among Media Aware University Students

The majority of available statistics in Sweden are based on traditional measures concerning minutes spent on each media on the average day without presenting any overlapping use. Paper VI is based on an exploratory study and aims to discuss issues on media measurement in relation to concurrent media consumption of digital media news services. The two main research questions behind the paper were:

How do media aware university students consume media simultaneously? What media is prioritized when consuming media simultaneously?

The paper is based on survey data from the same survey that was also used in papers IV and V, which was conducted using a sample consisting of students from the Media Technology program at the Royal Institute of Technology (KTH), Stockholm, Sweden. The data was mainly analyzed qualitatively as the majority of the survey questions used for this paper were open-ended.

While people are on the Internet, they try to make the most of it by multitasking. Furthermore, in the nature of multitasking activities lies that attention may shift from one task to another. In the context of consuming several media at a time, the shifting of attention may furthermore have an effect on less attention to the advertisements presented in the different media channels.

In North America, several studies have for a few years, repeatedly reported on the growth of simultaneous media consumption and the of acknowledgement of it In this context, these studies emphasize existing problems with the current methods of measuring media use. As most media consumption research evaluates use of one medium at a time, these studies recommend observation methods as a suitable research method for detecting simultaneous media use.

The respondents were asked if they ever consume and use several media simultaneously, such as using the computer while the TV is on, and talking on the mobile phone. The 91 % that responded that they do, were furthermore asked to state what media they use, and order these depending on the media they put most of their attention to. The respondents stated that a combination of the computer with the Internet where the media most common to consume simultaneously with other media such as TV or the mobile phone. The phone was furthermore the media most mentioned as prioritized when consuming media simultaneously. The findings thus indicate that simultaneous consumption is common among the media aware technology students in the sample.

Multitasking or simultaneous media consumption is not a new phenomenon, however the notion among researchers of simultaneous media consumption and its implications for the media industry seem to be. Previous studies have focused on a combination of two media consumed simultaneously. The paper concludes with stating that simultaneous media consumption might imply for the media companies that competition for the audience attention takes on new forms. This consumption might then affect media companies as their advertisers are becoming more and more aware

of the phenomenon. Measures for media consumption have to be adapted to this behavior and previous research suggests that observation methods might be used to detect simultaneous media consumption.

4.7 Paper VII: Attitudes toward digital news services

In paper VII, the audience perspective on added value of digital news services and convergence was investigated. The paper discusses three areas in relation to new digital news services provided by the newspaper companies: the added value of the services as perceived by the audience, the concept of the digital newspaper and the market convergence in the newspaper industry. One type of digital newspaper is the online edition. An online edition of a newspaper was in paper VII defined as a web page with news content, consisting of a frontpage where the content is updated daily or several times a day and where there are advertisements, links to older content and links to additional digital news services.

The method used was a quasi-experiment. A convenience sample was used for the quasi-experiment consisting of a total of 20 persons (10 males and 10 females). The participants that were invited to participate were mainly master students in Publication Technology, PhD students from the department of automatic control at KTH and master students in biomedicine at the Karolinska Institute in Stockholm. The data was collected with the aid of diaries and focus group discussions.

In relation to the perceived added value, other factors such as: to participate and be noticed via interactive features or frequency of newly updated content in the digital news services were discussed. The emerging concept of the newspaper was assessed in terms of when a digital newspaper service is not perceived by the audience as a newspaper service, but rather is perceived as a stand-alone digital news source. In this context the audience view on convergence of content and technology was also discussed.

In the review of related research the paper states that digital editions of newspapers have due to their dependence upon their print counterparts become similar to the printed newspaper both economically but also conceptually. The nature of digital news services can be described from at least two standpoints, as media complementary services or as competitors. When different media channels overlap at a low level, complementarity occurs as this indicates that different media serve different needs. At higher level of overlap, competition occurs. In the context of digital news services, media convergence has brought up many concerns among the professionals in the news industry. This has occured in particular, concerning discussions on who will benefit from the effects of such media convergence. The paper suggests that one way of measuring how the general public may benefit from convergence in the newspaper industry is to discuss media convergence in terms of added value.

In the exploratory study of the paper, the data has been analyzed qualitatively and the results indicate that there were no or little tendencies of specific differences between the three groups participating in the study. The findings of the study indicate that a

majority of the respondents had not previously been consuming news in the three investigated services: web TV, blogs and podcasts. Many of the respondents stated that these services, in their current state were of no, or little value to them. In both the diaries and the focus group discussions, it was clear that interactivity in the services was of no importance at all to all the respondents. The results of the study further indicate that in 50 percent of the web TV clips watched by the respondents, the participants perceived the digital services offered by the newspaper as somewhat similar to the printed newspaper. In 68 % of the blogs read, the respondents associated the service with a printed newspaper or got a similar feeling as reading a newspaper. However, only in 37 % of the podcasts, did the respondents get a similar feeling as reading a printed newspaper. As podcasts and web TV are based on audio or video content, and newspapers to a substantial amount contain text and images, it is natural that they were not regarded as similar. The blogs were mainly regarded as similar due to the similarity in content and to the fact that they often were written by journalists in the same style as they write in the printed newspaper.

The paper suggests that offering additional digital news services can imply added value for the newspaper companies, such as a possible increase in the number of users of the online edition, and thus increase advertisers' willingness to invest in the online edition. However, the services need to be updated more frequently, have more serious and high quality content in order for the participants of the study to find the services worth consuming. The services investigated seem to serve as complementary services to the printed edition of the newspaper, as the participants of the study found them to overlap on a low level, thus currently not competing with the printed edition to any large extent.

The conclusion of the paper was that the web TV, blogs and podcasting services available on the investigated Swedish newspaper websites at the point of investigation were not sophisticated enough to serve as stand-alone products, as they contributed with no or little value to the participants of the study.

5. Discussion

This thesis reports on different types of convergence in the newspaper industry, where convergence, as it is defined in this thesis, denotes processes and not effects. The processes of media convergence can involve devices, content, markets and networks, and thus furthermore involve both media consumption and media production. Convergence is a concept frequently used in many different industries and disciplines, and as Gordon (2003) states:

At the dawn of the 21st century, it seems nearly impossible to follow developments in technology, business or journalism without encountering the word "convergence".

In this thesis convergence in its most general form is defined as follows:

> Convergence denotes processes where separate entities come closer to each other, approaching a certain value or state.

Figure 10, illustrates three models of general convergence processes, as they are used in this thesis. In each of the three models more entities can be added, as long as they are striving toward the same point or state as the other entities. The first of the three images below shows how two separate entities are approaching each other towards a common goal. The second image is illustrating three areas approaching towards a common intersection. In the third image, one entity is approaching an area which is not changed by the process of the approaching entity.

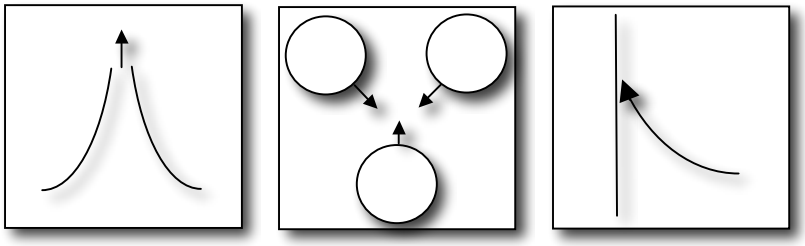

Figure 10: Three general convergence models.

It is the author's opinion that the concept of convergence may be used for actions early in a process, to denote indications of separate entities coming closer together, as well as almost at the end of a process, where it may also be possible to detect effects of the convergence process.

One of the aims of this thesis was to assess how the views and strategies of newspaper companies concerning media convergence correspond with the opinions and views concerning convergence of their audience. In order to discuss this, it is however of importance to establish what is meant by convergence. The first section of the

discussion will therefore address different types of media convergence. The second section then discusses how the newspaper industry is relating to the processes of convergence, using two examples: newspaper companies' ventures into the use of moving images, and the newspaper companies' strategies for a future e-paper edition. In the third part of the discussion the audience perspective on digital news services is discussed. The chapter concludes with a method review and reflection of the results.

5.1 Types of media convergence

The development of wings on birds and bats are one example of convergent development, where species have developed similarities, however not converged into one new species. When people choose to use different media devices for the consumption of content, somewhat the same phenomenon can be observed. Technologically, fully converged devices exist on the market, such as smart phones and PVRs (Personal Video Recorder). However, people may still prefer to watch TV on their TV set and use their computer for work. The purposes of the devices may however be changing. Increasingly people are starting to use the same devices for different media activities. The development of the devices can be described as convergence while the fully converged devices and the use of them then constitute examples of effects of convergence process.

Not only is it important to distinguish between convergence and the effects of convergence, but it is also important to keep in mind that what may look like convergence to one party, can appear to be divergence for another. For example, as seen from the consumer's point of view, a range of publishing channels with news content, such the printed newspaper, the TV and news provided on the internet, may to the consumer appear as a *divergence* of publishing channels. At the same time, the content in a printed newspaper, in the online edition and on other sources on the internet may be similar, and therefore appear to the consumer as *convergence* of content. The audience may furthermore consume media simultaneously, having the TV on, reading a book and perhaps also chat on the internet at the same time. This may be seen as a *divergence* of attention because of all the activities taking place at the same time. The blending of these three activities into one can however also be seen as *convergence* as these activities are merging into one media consuming activity.

As was illustrated in the above given examples, where to draw the line for what is convergence and what is divergence, may be an almost impossible task to accomplish as it always depends on the frame of reference. Previous research has suggested sub-areas of convergence, to facilitate the use of the concept. Gordon (2003) divides convergence into five areas: ownership, tactics, information gathering, presentation and structure. This is one of many examples of dividing convergence into several sub-areas.

My studies indicate that there are interesting sub-areas of convergence. The sub-areas that have been used for the research of this thesis are described in table 2, where I have provided one example for each suggested sub-area.

Table 2: Different sub-areas of media convergence.

Type of media convergence	**Description**	**Example**
Convergence of devices	Merging, integration or combination of components or functionality making different devices with previously separate usage areas more and more alike	The development of smart phones with similar functions to those of PDAs and handheld computers
Convergence of networks	The development and use of similar protocols used by previously separate networks	The emergence of the internet
Convergence of services	Services which have traditionally been associated with a certain media channel, now provided through alternative media channels	The service broadcast TV available on the TV channels' websites as the service web TV
Market convergence	Separate markets approaching each other and the move of actors on the market into adjacent areas, which have not previously been their areas of interest	A company specialized in telecommunication services starting to also provide content services
Newsroom convergence	The sharing of resources within and between media organizations	Using a central newsdesk at a newspaper company to coordinate activities in the different content departments
Convergence of content	Publishing the same content in several publishing channels	Multiple channel publishing of the same content in the printed newspaper and the online edition of the newspaper
Experience and behavioural convergence	The consumer activity of mixing and blending content when consuming media, also denoted as media multitasking or simultaneous media consumption.	Listening to the sound of the TV while browsing the internet and talking on the phone

In addition to the sub-areas of convergence, as was pointed out by Bolter and Grusin (2000:224-225) different industries will use the concept of convergence differently depending on their area of expertise. In the same contexts as convergence, there have

therefore also been other terms used to describe the same phenomenon, such as synergies (Gordon 2003), confluence (Dupagne and Garrison 2006, Hynes 2003) and triple play, ie. the coming together of voice (telephony), internet (high speed broadband) and TV (video) (Friedrich et al. 2007, Moerman et al. 2005).

5.2 Media convergence strategies at newspaper companies

Newsroom convergence which was one of the convergence types in table 2, is described by Quinn (2000) as the sharing of resources within and between media organizations. Gordon (2003) also describes convergence taking place at media companies, and states that for complete convergence to become reality, technological changes has to be made in every stage of the information infrastructure, from content creation to distribution to consumption. In section 6.2.1 the advantages of producing moving images for a newspaper company are discussed as one example of how newspaper companies form media convergence strategies where newsroom convergence is a sub-area. In section 6.2.2 the planning of a future e-paper at the newspaper companies is described as another example of how newspapers relate to media convergence.

5.2.1 Example 1: Convergence strategies for the production of moving images

In paper II, cooperation and convergence between newspaper companies and TV companies were described. At the time of the study presented in paper II, the three investigated newspaper companies produced content for web TV or DTV (Digital TV) with three different approaches:

1) The acquiring of a video production company, which brought the competence needed to produce high quality moving image content into the newspaper organization.

2) Cooperation with existing TV players, producing teletext and text services for digital TV program guides, as well as producing short niche content video clips for broadcasting in existing TV channels.

3) Cooperation with a TV channel, regularly broadcasting niche content from the newspaper company's own studio. Furthermore using the studio to produce content for the online edition of the newspaper.

In the first approach, the aim of the venture was to maintain a strong local position with the aid of multiple channel publishing on a local market. The moving images were therefore also promoted both on the web and in the printed newspaper. The second approach was made at a national evening newspaper with the strategy to always be first in new publishing channels compared to other newspapers in Sweden. At the time for the study, the moving image or TV content projects at this newspaper were to be considered as "test projects" with the aim to gather new knowledge. The

projects did therefore not have to be profitable for the newspaper company. It was however important to keep expenses as low as possible and therefore to cooperate with existing TV players on the market. The third approach concerns cooperation with an existing national TV channel. Both the niche content national newspaper and part of the TV channel belong to a larger media company. The idea to cooperate in a project came from the TV channel, which wanted to compete with other national channels in providing this type of niche content together with the newspaper company.

The strategies for starting to produce content for this publishing channel where thus to acquire the knowledge needed by buying a whole company into the organization, to use the competence already available in the organization, or to cooperate with established companies with competence. The aims with the moving image projects were to maintain a market position, to strengthen the brand of the company or to provide niche content to an audience. The financing of the services could not be guaranteed and therefore the projects were regarded as "test projects".

The investigation of moving images for newspaper companies was carried out in 2002. Today, according to the Swedish Publisher's Association (nd), 27 of 107 Swedish morning and evening newspapers are providing Web TV services on their web sites. The activity of watching moving images on the internet is according to MMS (2007) increasingly becoming more popular in Sweden, especially among the younger generation which is getting used to watching short clips of moving images on the internet using for example Youtube or the media players available at web sites of the major national TV companies.

Future research should investigate the current strategies at newspaper companies for web TV as many things have changed on the moving image market compared to when the studies for this research were carried out. It would also be of interest to compare the strategies of the newspaper companies with those of other media companies providing similar web TV and other moving images services to the audience.

5.2.2 Example 2: Convergence strategies for planning a future e-paper edition

An e-paper edition may be one of several future publishing channels at newspaper companies. In paper III, strategies at three regional newspaper companies for the launch of a future e-paper edition were discussed. The three approaches found were as follows:

1) Producing an e-paper edition that would be identical to the printed edition, much resembling the existing PDF-file published on the newspaper companies website, however produced for an e-paper device. The target groups for this edition were subscribers living in sparsely populated areas or abroad. The main aim of producing this edition would be to cut distribution costs for the printed edition.

2) Producing content that is well suited for the e-paper format.

3) Producing an e-paper edition, which functions as an extension of the online edition of the newspaper company.

The study of e-paper in paper III was during 2004 followed up by four more case studies at Swedish newspaper companies and two international newspaper companies having previous experience from producing content for e-paper like products. During the study for paper III and the case studies of the follow up study, e-paper was not on the market, but the studied newspaper companies were all planning for a future launch of e-paper as an additional publishing channel.

Producing content for an e-paper edition can be compared to producing content for other types of editions published on other portable devices such as for example a PDA (Personal Digital Assistant), a mobile phone or a Tablet PC. Therefore, the strategies and visions at the newspaper companies for e-paper are similar to those of other new news content publishing channels formed at newspaper companies.

The strategies for a future e-paper edition were mainly of two kinds, to use the existing production workflow at the newspaper company and provide a newspaper that was identical to the printed edition, but distributed digitally to an e-paper device, or the opposite, to dedicate resources that would work primarily with producing tailored content for an e-paper edition. The aims with the e-paper edition were to reach the part of the audience that was not yet paying for any of the newspaper companies' products, making them pay for the content, or to cut costs by distributing the newspaper digitally, thus avoiding expensive printing and physical distribution costs. Another option was to use the e-paper edition as an extension of the online edition, much like the current sms-services or content for PDAs.

The cost of producing and providing the e-paper edition would in case of providing an digital replica of the printed newspaper be almost none, as these costs would be shared with the production of the printed edition. In the case of dedicating special resources and produce a unique product however, the financing could be costly.

The investigations of e-paper were carried out in 2003 to 2004. Several test projects have since been performed, but the newspaper companies participating in the research have not yet launched an e-paper edition.

It must be noted that the expectations on the e-paper edition in the newspaper industry have been high. The strategies for the e-paper edition have therefore in the author's opinion been somewhat unfounded, lacking plans for financing, lacking clear target groups and a clear purpose. Instead it is the author's opinion that the e-paper edition was at the time of the investigation "hyped" at the newspaper companies without much real substance to the ideas concerning this future edition. The story of the e-paper technology and services so far, could as suggested by Wilson (2004) be termed as "techno-hyperenthusiasm". With the aid of mass media, press-releases from e-paper developers, newspaper articles presenting interviews with e-paper "experts", popular science articles presenting the advantages of e-paper referring to sci-fi movies such as

Minority Report[1], the audience as well as the newspaper companies were being prepared for the advent of e-paper. A simple search in the archives of the online service Wired News[2] brings articles stating that e-paper has been on its way, soon to be on the market almost every year since 1999. According to Wired News, having interviewed representatives from different companies developing e-paper technology, e-paper was in 1999 said to be on the market in three to five years (Kahney 1999), in 2001, e-paper was expected to be available to the consumers by 2003 (Mayfield 2001), in 2005 an article predicts e-paper displays on the market in 2007 (Gain 2005).

It is the author's opinion that e-paper technology may be a preferable screen technology for many different portable devices and that creating an e-paper news edition lies in a more distant future. Before planning for such a product, future research should focus on testing the e-paper technology and investigate the consumer need for e-paper news editions, as well as develop a clear aim for the newspaper companies with an e-paper news edition. If the newspaper companies cannot be sure that there exists an audience for such a niche product, and that the technology is reliable, the e-paper edition will only add to the list of less successful digital newspaper editions such as the Tablet PC at Los Angeles Times or the Viewtron by Knight Ridder et al. (Fidler 1997).

5.3 Digital convergence of newspaper services from the audience point of view

In this thesis, not only the newspaper companies' views on convergence and multiple channel publishing have been investigated, but also the newspaper audiences' view on the processes and effects of convergence in multiple channel publishing.

Digital news services can add value to a newspaper company. As was found in paper VII, the investigated services do however not currently meet the audience expectations on high quality and interesting content.

Summarizing some of the key findings from paper VI-VII, the audiences' views on digital news services are as follows:

1) A newspaper can be both printed on paper and distributed digitally and still be considered a "newspaper".
2) The brand of a printed newspaper is considered to be trustworthy and rubs off onto the newspaper company's other products.
3) Podcasts and blogs are considered as "new" media while online editions and web TV are not.
4) Interactive features in digital news services are not considered as important or interesting.

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[1] An action sci-fi movie directed by Steven Spielberg from 2002. In a sequence of the movie, printed newspapers with moving images are shown.
[2] Wired News, the online version of the magazine Wired, available at http://www.wired.com/

5) The quality in digital news services such as web TV, blogs and podcasts has to be high both in terms of content and technology.
6) The content in digital news services has to be free and easily accessible.
7) Newspapers are not considered as a media to consume simultaneously with other media. If the activity of reading a newspaper is part of a multi-tasking activity, it is not perceived as prioritized over the other activities taking place.

The results from the audience studies reported in papers IV-VII on media technology students cannot be used for generalizations and future research is therefore needed. In order to find target groups for digital news services, the audience opinions and views on digital news services must be investigated further. Future research should also investigate user opinions on larger samples and over a longer period of time. Furthermore it would be of interest to compare such findings with usage statistics of the services. For future research it would also be of interest to repeat the audience studies in this thesis with respondents from other age groups and groups with other backgrounds. As the services investigated in this study were limited to Swedish morning newspapers, it would be of interest to analyze the same type of services available in national evening newspapers as well as from national and international media companies from other parts of the media industry.

5.4 Reflections on the methods used in relation to the results obtained

The qualitative methods used for the research in this thesis have been interviews, observations, focus groups and diary studies. These methods were chosen to investigate the similarities, differences and challenges of the production workflow for multiple publishing channels at several different publishing companies. Furthermore, qualitative methods were selected to point out the specific trends, common strategies or successful moves and ventures unique to each publishing company since the companies are difficult to compare on a more general basis. Qualitative methods were also chosen to get deeper knowledge on the audience attitudes and views on digital news channels.

The case studies in this research were mainly based on qualitative research, such as empirical observations and semi-structured interviews. Holme and Solvang (1997) suggest that reliability and validity are best secured by reciprocal actions between researcher and the interviewed objects in a study. The persons interviewed in the included papers have therefore in almost all cases extent been contacted for follow-up interviews or to review the findings of their interviews, thus creating a reciprocal action between the researcher and the interviewed objects.

According to Creswel (2003), qualitative research is characterized as interpretative research, thus making it impossible to ignore personal interpretation brought to analysis of data. The role of the researcher is therefore important to consider in relation to the results. Using qualitative methods implies that the validity will be high for the collected information as the researcher is close to the studied objects. However,

the closeness of the researcher to the object could affect the findings by indicating connections or suggesting solutions that those interviewed would not have thought of themselves. The reliability of the findings in qualitative research is of less importance, since it is almost impossible to re-achieve the same social settings for the case studies performed. (Holme and Solvang 1997)

The quantitative survey used in papers IV-VII was conducted to gather views and opinions from highly educated and early users of new technology. The intention was not to generalize the results to the entire population or to be able to perform inferential statistical analysis on the data. Many of the questions in the survey were furthermore open ended, which implies that the answers of these questions had to be interpreted and analyzed in a qualitative manner.

I have defined my research as cross disciplinary, as I use methods and theories from several research disciplines to answer my research questions. Using multiple methods both quantitative and qualitative, as have been done for this research, does not make the researcher a specialist in a particular research method or an expert in one particular area. I believe however, that this perspective on research is necessary in the area of media technology, as this is an area under constant development with its roots in several different industrial fields such as the graphic arts industry, the computer industry, the broadcasting industry, and with the processes of market convergence, many other industries to come.

There are several limitations to the results presented in this thesis. The most apparent one is to what extent one can trust the information found in the interviews with the representatives from the newspaper companies. I will here use the e-paper projects as to illustrate this complicated situation.

At the time for this research, several of the studied newspaper companies participated in projects focused on developing a future e-paper newspaper edition. Much of the information on e-paper technology and characteristics that flourished at the studied newspaper companies came from the people having attended such project meetings. Furthermore, information was provided to the newspaper companies by researchers working in the projects, and managers leading the projects. The information reached the newspaper companies at meetings, conferences, in reports and via e-mail. Some of the newspapers also used mock-ups of e-paper terminals to perform user studies with readers. Within the projects, direct information from the e-paper manufacturers was given at meetings and field trips. Information was also provided via e-mails containing official press releases from the e-paper manufacturers reporting of progress in the development of e-paper.

Thus, more or less, the same information was exchanged over and over, changing gradually depending on who was making the statements. Mainly, this information concerned the technological conditions for the display of the e-paper device, the constraints of the digital distribution nets, the different file formats that could be used in the e-paper devices, the physical appearance of the device and the future layout of the edition. Furthermore, all the provided information including technological specifications was of general nature and could be traced back to a few reports and

conference talks. Thus, much was said about almost nothing, repeatedly. Very little attention was paid to the future e-paper production workflow, the type of content suitable for the service and the target groups for an e-paper edition. Furthermore, some information was not shared between the various projects, even though many of the project members participated in several e-paper projects.

It was therefore important for the researchers working in these projects, to distinguish between what the interviewed newspaper companies actually knew and believed in concerning e-paper, and what they merely repeated from what they had heard others say. Furthermore, it was noted that the interviewed newspaper companies were interested in the researchers' standpoints, which challenged the researchers in their roles as interviewers and not interviewees.

The results concerning the moving image projects were not collected from the same type of projects, but rather from several different projects taking place at the investigated newspaper companies, TV companies, broadcasters and technology manufacturers. In this case, it was possible to collect several different opinions and views on moving image production as the information was to a much lower degree repeated over and over.

This thesis discusses multiple channel publishing as given, as most newspaper companies today publish news online and in additional publishing channels. However, multiple channel publishing may not be something that can be taken for granted. At the end of August 2007, there was a strike notice concerning the agreement of salaries for Swedish journalists. If negotiations would not have resulted in a mutual agreement[3], the notice would have forbidden journalists at most Swedish newspapers to publish content produced exclusively for the online edition. Furthermore, the journalists would not have been free to edit text already printed for publishing in online editions (TU 2007). Such a notice would if it would have it became reality put a brutal end to multiple channel publishing as we know it today, and also overturned many of the findings presented in this thesis.

6. Discussion

In this thesis, media convergence strategies and added value of digital news services have been investigated focusing on the newspaper industry and it's audience. Among the findings are that digital news services can add value to a newspaper company, however that the digital news services investigated, in their current form, are not sophisticated enough to give added value as perceived by the audience.

Other media industries than the newspaper industry are outside of the scope of this thesis, however, similar convergence tendencies as in the newspaper industry can be

[3] The agreement can be found at
http://www.tu.se/uploaded/document/2007/8/30/Slutbud070830_0.pdf

noted, such as TV companies attempting to start broadcasting moving images to mobile phones or the electronic publishing of books in the publishing industry.

Due to different forms of convergence, the concept of the newspaper is changing. This thesis suggests that the primary product of the media company, in this case the newspaper would define the nature of the media company's additional products, such as the digital news services investigated.

When the online edition was introduced as a new publishing channel at the newspaper companies, it was initially regarded as a threat to the printed edition. There is a possibility that the status of online editions has moved on from "new" media, to established media, attracting advertisers to a greater extent than before and thus making the online editions more threatening to the printed editions. Additional digital news services available on the investigated Swedish newspaper websites, were in this study however not found to be established and therefore not yet threatening to the printed edition.

Newspaper companies in Sweden do not have resources enough to perform large scale experiments involving new publishing channels that may not be popular and profitable. Their brands which by the audience are perceived as trustworthy might also be injured if the newspaper companies offer low quality services to their audience. It is therefore of great importance that the audience perspective on how to consume news in the future is further investigated before forming strategies for future news services at newspaper companies. The survival of the newspaper as we know it today is all a matter of what the audience wants, needs and will pay for.

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