Introducing the Digital News System into a TV Newsroom: A Case of SBS, South Korea

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Abstract

The research examined how digital TV news technology was adopted and used by individual TV journalists within the newsroom of the Seoul Broadcasting System (hereon, SBS) that adopted a digital TV news production system for the first time in South Korea (hereon, Korea). For this purpose, this study investigates 1) the process by which SBS introduced the digital TV news production system into the SBS newsroom in terms of the organisation; 2) the process by which SBS introduced the digital TV news production system into the SBS newsroom in terms of the journalist; 3) the specific changes that occurred in the SBS newsroom after adoption of the digital TV news production system.

The study conducted three pieces of field research: 33 in-depth interviews, participant observations, and a survey. Based on the field research, this study finds that firstly, although SBS managed to implement newsroom digitalisation only in technological terms, SBS had to abandon most initial goals such as introducing multimedia journalism and newsroom convergence; secondly, the SBS project team's enforcement of some impractical plans, including establishing a command room and an information support centre, caused unexpected resistance from journalists. This led to journalists becoming disillusioned with the project. As a result, SBS wasted resources such as time, energy and money.

The study tried to provide ideas for other media companies, which are considering converting their analogue news production systems into digitalised systems. In addition, the study's empirical findings can provide lessons for TV stations worldwide, which plan to adopt and implement similar newsroom digitalisation.

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Chapter 1 Introduction

Digitalisation, which changed operational trends dramatically across the globe, provided the impetus behind the adoption of digital technology by the broadcasting industry. This has proven to be both efficient and productive. Technological development in the workplace changes work conditions and influences the quality of the final deliverable or product. A classical example can be found in the fact that news journalists in the first decade of the current millennium have experienced important forces of change that can be traced to technological advancements like newsroom digitalisation.

1.1 The ENG revolution in news production

In the past, news centres at TV stations turned into "battlefields" before a live bulletin show. It was after ENG (Electronic News Gathering) cameras were introduced at the end of the 1970s that a revolutionary change occurred in the news production system that made the news centre a battlefield. Previously, broadcast journalists did not put together news stories with their own narrations. They just handed in their stories to be read by announcers. The next step was broadcasting with pictures shot at the scene by camera crews.

By 1979, the ENG revolution was gathering momentum, and it soon became the mode of operation in the industry. In 1980, ITN became the first UK broadcasting company to introduce large-scale ENG operations. By 1982, filming was no longer in use. In its stead the process of recording sound and images electronically, originally as analogue signals on magnetic tapes, and conveying them back to the newsrooms in an electronic format was in vogue.

In the early 1980s when the researcher started his career as a journalist, ENG cameras were used by journalists. The researcher and others in the industry started making news with their own voices. Experts and members of the public could share their ideas using their own voices and of course the viewers could also hear the background sounds right in their living rooms. This naturally turned journalists into footage-making producer/journalists rather than just news-covering journalists. Additionally,

camera crews had to learn new ways of editing. A journalist put his or her own voice and the background sounds on the two-voice track and the interview on the visual track.

This footage lasts one or two minutes but it goes through very detailed processes. Usually 30 packages are aired during the 8 o'clock main bulletin. Some are pre-made but most of the packages are made around 6pm. This is when the news centre becomes a battlefield, with people rushing to perfect the materials they put together. Every newsroom is jammed with people in the afternoon preparing the finalised tapes. Usually the order of the package is decided by the importance of its content. Finalised tapes should be ready to air before the show. However, some journalists spend more time on editing because they want to perfect their work, though this often leads to tardiness.

From that era up until the present, newsrooms were battlefields. If the finalised tape did not arrive on time, the staff of the studio became upset. The editing staff would also be disappointed. When the editing was done, journalists ran to the studio with their tapes. Quite often, a journalist would come running into the studio during a live show. It is not surprising that many people labelled the newsroom as a battlefield. On the other hand, some unlucky journalists who could not make it in time had their packages aired at a later time.

1.2 The digital revolution in news production

Now, another revolution has begun. Digital news production systems have been introduced in most TV broadcasting houses all over the world. What was the biggest change when the digital news production system was introduced to newsrooms? First of all, we cannot see journalists running with tapes in the news centre anymore. Secondly, all products are sent through the electronic network and not on tapes. Consequently, all news centres have become as quiet as a library.

Having tapeless and paperless newsrooms is another element of the change that is taking place. Journalists can do all their jobs on their own PCs. Some of these jobs include writing and sending news stories, searching for news materials, and editing

pictures. Software for operating the digital news systems have been developed and are on sale on the open market. Tapeless digital ENG cameras are readily available on the market as well as NLE (Non Linear Editing) systems, which are now widely used.

What then is the main change? Everything has turned out to be simple and convenient. This is reflected both in the cost and in the mindset of journalists. There are concerns about how the digitalised system would actually be accepted and become usable in newsrooms. The researcher has discovered that many stakeholders in the world of journalism have concerns about how the digital news systems could work successfully in newsrooms. This is the issue that this study addresses.

Digitalisation of the newsroom is now a global trend. Media companies including TV broadcasting companies all over the world have replaced or are replacing their obsolete analogue newsrooms with state-of-the-art digital newsrooms. Accordingly, this all-file-based system requires dramatic adjustments in the newsroom in terms of technical solutions, the workflow process, archiving and job profiles. In order to illustrate the phases of newsroom digitalisation worldwide, Yoon (2003) identifies the phases of digitalisation of TV newsrooms, with representative examples of TV newsrooms at each phase in 2003, as shown in Table 1.1.

Table 1.1 Newsroom digitalisation phases

Phases	Composition	Broadcasting companies
(1) analogue	analogue equipment and facilities	
(2) analogue + digital	analogue VCRs and cameras partially replaced with digital ones	KBS (Korea), MBC (Korea)
(3) analogue + digital + network	news production system completely digitalised	ETTV (Taiwan)
(4) analogue + digital + network + archive	digitalised newsgathering equipment; digitalised pictures; completely networked production environment; digitalised archive	BBC (UK) SBS (Korea)

Source: Modified from Yoon (2003, p. 24)

Broadcasting companies everywhere are implementing digital newsrooms. For example, in the UK, the BBC introduced its digital 24-hour news channel in November 1997, Sky launched digital services in 1998 and Independent Television News (ITN) followed in 2000. Finnish public service broadcasting (YLE) introduced a digital, automated system in 1996. In Spain, the commercial network Telecinco was

the first to launch a digital news operation in August 1998, and the commercial network Antena 3 followed in September 1999. Other broadcasting companies, such as Italy's Mediaset and RAI, and France's TF1, also went digital throughout the 2000s. In the USA, a number of the local stations of CNN, MSNBC and Fox News have implemented digital newsrooms since 2001.

1.3 The new paradigm of digital news production

Negrine (1994, p. 81) notes that although the crisis in broadcasting is very frequently seen in negative terms, a changed environment also provides new opportunities. Quoting the Chinese character for crisis (危機: wei-ji) which combines two letters, one signifying danger (危), the other opportunity (機), Pavlik (2001) also maintains that television news is undoubtedly moving into the age of such a crisis as it introduces full-scale digitalisation: "the transformation of analogue audio and video into digital form" (p. 115). In addition, Andy Grove (1996), the founder of the computer chip manufacturer Intel, wrote in his book, *Only the Paranoid Survive*, that strategic inflection points which can be caused by technological change "do not always lead to disaster" and "When the way business is being conducted changes, it creates opportunities for players who are adept at operating in the new way."

On the other hand, there is a stark contrast in views about newsroom digitalisation between Pavlik and Cottle. Pavlik is relatively positive and optimistic about the future of the digital age in comparison with Cottle who is concerned about the implications of digitalisation for journalism. Pavlik (2001) insists that the digital method "heralds" significant change in how journalists collect and broadcast news and information (p. 115).

Furthermore, Pavlik (2001) explains that in a digital newsroom, every component processes information in digital, computerised form including all text, data, graphic, audio, and video (p. 115). Consequently, editors and producers process these components in a nonlinear way, cutting, pasting or manipulating motion video and audio as easily as a word processor does (p. 116). Pavlik (2001, p. 116) illustrates scrupulously the advantages of the digital system. Digital technology allows

journalists to experiment with different video clips, and to move back and forth among original video segments to perfect the product. Every component, from camera movements to presenter scripts for the teleprompter, is converted into a coded form in the digital newscast. When finished, the digital newscast is transformed back to analogue style for broadcast or cablecast or kept in digital form for dissemination or archiving on a video server or database, so that audiences can gain access online or by another video-on-demand service (Pavlik, 2001, p. 116).

Although digitalised newsrooms have many advantages, as mentioned above, implementation of the digital news production system is not simple. In particular, it is a difficult job to persuade journalists to adopt the new technology because news workers feel reticent and stressed when they first encounter TV news digitalisation. A comparison between the two systems is shown in Table 1.2.

Table 1.2 A comparison between analogue and digital systems

Modules	Analogue system	Digital system
news picture editing	tape-based linear editing	nonlinear editing (NLE) system (in operation in SBS)
news broadcasting	analogue transmission	automated digital transmission (in operation in SBS)
video database	tape-based database	server-based digital archive (in operation in SBS)
news picture shooting (cameras)	cassette tape-based analogue cameras	disk-based digital cameras (in operation in SBS)

To overcome the difficulties of newsroom digitalisation projects, in 2002 the European Broadcasting Union (EBU) created the 'Digital Newsrooms project' to exchange members' experiences through thematic visits and seminars. Furthermore, EBU, the largest association of national broadcasting companies in the world, with 75 active members in 56 countries, provides members with information about newsroom digitalisation. EBU's project shows how intensely European broadcasting companies have been interested in newsroom digitalisation. Table 1.3 illustrates EBU's activities in the analysis of media trends and training designed to meet their needs.

Table 1.3 EBU's thematic visits

Broadcaster	Time	Focus
BBC	July 2003	digitalisation of newsroom technical options; workflow multi-skilling training issues.
YLE (Finland)	September 2004	newsroom digitalisation
France 2	March 2005	user's interface media manager; centralised media library
BBC	June 2005	the Jupiter server production project; latest technical innovations in the realm of news production; personal digital production (PDP); user generated content (UGC)
DR (Denmark)	November 2005	central role of the archives in the news production workflow; training of the editorial staff and the way quality is being controlled
Zagreb (Croatia)	November 2006	digitalisation of newsroom
SF-TV (Swiss)	December 2007	HD (high definition) news production
France 24	March 2008	newsroom digitalisation

Citing Grove (1996), who observes that the crossroads or a "strategic inflection point" (online) occurs when change is so powerful that it fundamentally alters the way business is done, Stone (2001) regards the powerful change as "the digitisation of information, which enables multimedia convergence" (p. 2). However, since the mid-1990s, there has obviously been a revolution, which has influenced journalism fundamentally (Yoon, 2003, p. 11). It is the so-called digital revolution, which introduced an epoch-making reform in the world of journalism.

The researcher's point is that we need actually to enter digital newsrooms if we want to understand completely how a news technology such as a digital news production system has met the journalistic culture and routinised practices in a newsroom. Most studies have focused on the implications of introducing the digital newsroom and have provided few explanations of the subsequent process of newsroom digitalisation, which shapes the new environment for journalists.

The researcher has met with the people who are inventing their own digital news production system. Borrowing from the conceptual framework of research in technological innovation, the researcher argues that a medium does not arbitrarily adopt the digital newsroom. Moreover, the digital newsroom was not designed beforehand and offered to journalists as a plug-and-play system that could be attached

to the existing working routines and structures. It does not come with an easy-to-use manual of instructions that would solve any problem in the process of adapting to the digital news production system.

As Negrine (1994, p. 81) observes, as technology develops, the broadcasting companies are forced to adapt to new and constantly changing environments. In other words, technologies are, in fact, adopted and adapted by specific people in particular social and organisational settings. Therefore, researchers need to meet journalists using the digital news production system and learn their routines and their expectations about the digital news production system, if they are to understand why journalists in a digital newsroom are working in a particular way.

Another important new trend in the news industry is multi-skilling. Automation of the system is likely to increase the work load of each person in the newsroom. Moreover, reporters have to learn new skills, such as technical understanding of broadcast sound quality and picture editing (Aviles and Leon, 2002). Many researchers regard newsroom convergence as a general tendency in the world. In particular, Singer (2004) observes that "convergence is becoming a global trend as media companies are trying to extend their business beyond the existing realms of journalism" (p. 3). In addition, investigating modern newsroom models in Central European countries, especially Austria, Germany and Switzerland, Meier (2007) notes that "through the global trend towards convergence" (p. 4), journalists in newspaper and news agency newsrooms of these countries have undergone radical changes in editorial job divisions, as well as routines and work practices.

1.4 Review of existing research on digital news production

1.4.1 Terms used in this research

Although the term "digitalisation" is usually used synonymously with "digitisation", the two are sometimes distinguished from each other. According to one website, "digitalisation" is defined as conversion of analogue information in any form (for example, text, photographs, voice) to digital form with suitable electronic devices (such as a scanner) so that the information can be processed, stored and transmitted

through digital circuits, equipment and networks (http://www.businessdictionary.com/definition/digitalisation.html, retrieved 29 September 2008). On the other hand, "digitisation" refers to the integration of digital technologies into everyday life by the digitisation of everything that can be digitised.

The term "innovation" is defined as "*any idea, practice, or material artefact perceived to be new by the relevant unit of adoption*" (Zaltman et al., 1984, p. 10, italics in the original). Similarly, Rogers (2003) defines an innovation as "an idea, practice, or object perceived as new by an individual or other unit of adoption" (p. 36). Diffusion refers to "the process in which an innovation is communicated through certain channels over time among the members of a social system" (Rogers, 2003, p. 5). Fichman (1992) defines information technology (IT) as "any system, product or process whose underlying technology base is composed of computer or communications software or hardware" (p. 10).

1.4.2 Multi-skilling

As mentioned earlier, the SBS project team wanted to introduce multimedia journalism practices, and they actually designed "one-man bands" or "backpack journalists", who are sent out on assignments alone, being solely responsible for shooting video, recording audio, writing text and putting them all together in a coherent news package. To grasp what their goal was and to what extent they achieved it, the researcher will discuss the idea of multimedia journalism.

A digital environment for news production enables the combination of multiple media formats and the coordinated delivery of content through different distribution channels. These would be the two sides of a "pragmatic contemporary definition of multimedia journalism" (Deuze, 2004, p. 140). At a first level of implication, multimedia would lead to the coordination or merging of the newsrooms of different media outlets (television, radio, newspapers, Internet, and mobile devices such as DMB in Korea) to produce multiple-platform news (Quinn, 2005, p. 29). Digitalisation enables journalists to share content among newsrooms and, furthermore, an integrated management of content produced by different newsrooms.

Domingo (2005, p. 7) noted that integrated newsrooms are regarded as the ideal model among a variety of forms of convergence, from product cross-promotion to multi-skilled journalists producing the same story to several platforms. In the integrated form, newsrooms would merge into a single news workflow, based on a coordination desk or on complete integration of journalists in a multi-skill team that would produce simultaneously materials for multiple channels. Multimedia editors would assign journalists the appropriate resources for an event coverage after planning what media are best suited to cover the story, the order in which information shall be delivered to each medium and which aspects of the news shall be covered in each case (Quinn, 2005, p. 32).

The second level of implications can be discussed in the context of online news production. The multimedia capabilities of the Internet provide a window of creative freedom for reporters. They may choose the most adequate format for each of the fragments that would form the hyper-textual news piece; this could be a video, a text, or a graphic depending on the kind of data to be explained (Deuze, 1999, p. 379). It is not only a matter of creativity, but also of efficiency of communication: online journalists have the responsibility of using at any given time the format that will guarantee the audience gets the best understanding of the events.

The researcher offers here some reasons why multi-skilling practices and newsroom convergence should be implemented at the same time when newsroom digitalisation is introduced. One of the most important aims of newsroom digitalisation is to reduce the cost of news production. If that is the case, how can the management cut these costs? Multi-skilling can be a substantial way to reduce the expense. Ursell (2001) observed that "the requirement to multi-skill is part way explained by the potential of the new technologies to dispense with specialist technical crews and workers: a potential harnessed by employers seeking to raise labour productivity and reduce labour costs" (p. 76). Consequently, it is natural that the BBC and Spanish broadcasting companies introduced multi-skilling journalism simultaneously with their newsroom digitalisation.

However, there is tension between cutting costs and the impact on the product of news. For example, a news editor of Telemadrid in Spain "warned against the use of multi-

skilling exclusively for economic reasons" because it could deteriorate the quality of the news output (Aviles et, 2004, p. 96). Multi-skilling leaves, as Aviles et al (2004) observed, journalists less time to complete long-established journalistic practices, "such as double-checking of sources and finding contextual information" (p. 99). Some journalists at Telecinco and Antena 3 in Spain also emphasised the problems with multi-skilling, underlining "the paradoxical tendency to place journalists in a narrower role in processing the news" (Aviles et al, p. 96).

1.4.3 Newsroom Convergence (Multimedia Journalism)

The researcher pointed out above that originally the SBS project team wanted to introduce a convergence operation system to resolve the challenge facing a converged media world in a cross-media newsroom. In order to understand the effort of the project team to achieve the convergence goal, it is necessary to explore the body of literature on newsroom convergence.

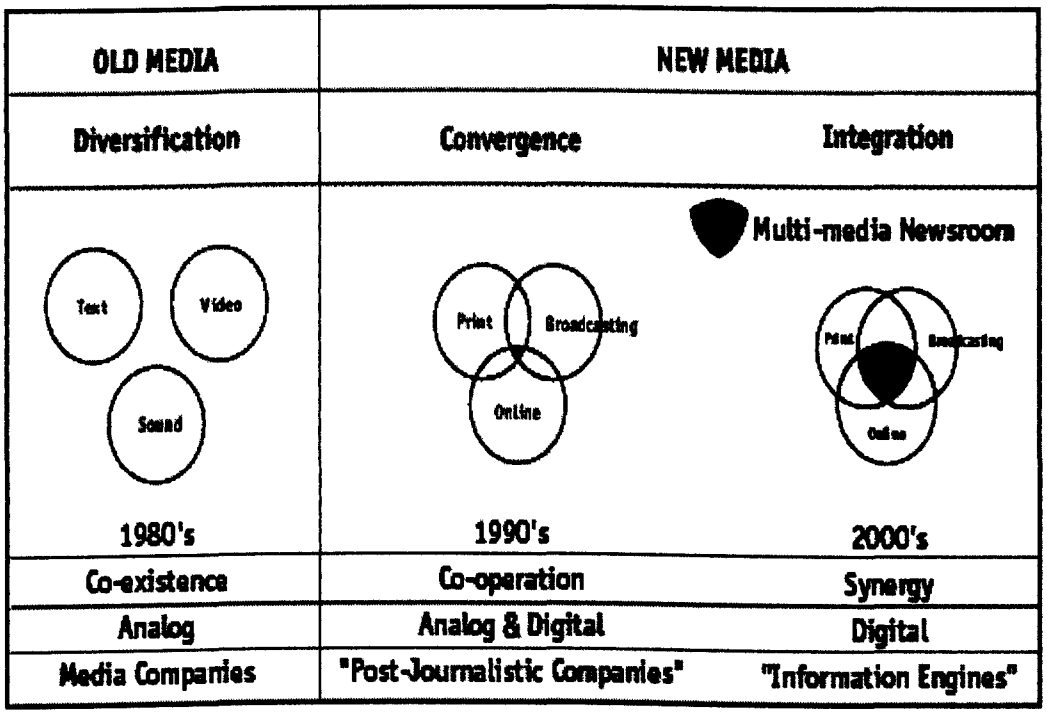
Convergence has been regarded as one of the difficult terms to define. Noting that "convergence refers to the growing interdependency among all communications media", Murali (2003) argues that "Ithiel de Sola Pool is credited as the first media researcher who described convergence in his 1983 book, *Technologies of Freedom*, which examined how media were being interdependent" (online).

Noting that "the digitisation of information has created the convergence revolution", Negroponte (1995), author of the digital revolution forecast *Being Digital*, argues that convergence starts with "bits", or the digital "DNA of information" (p. 11). Regarding this point, Negroponte said as follows:

> It would seem that if you are an information and entertainment provider who does not plan to be in the multimedia business, you will soon be out of business.
> What is this all about? It's both about new content and about looking at old content in different ways. It's about intrinsically interactive media, made possible by the digital lingua franca of bits. And it's about the decreasing costs, increasing power and exploding presence of computers (pp. 62-63).

According to Stone (2001), "convergence is a concept of the 1990s, illustrated by co-operative acts among print, broadcasting and online media within a media company" (p. 9). In integrated newsrooms, journalists work together, and the end result is the integration of TV, radio, newspaper and online journalism content under the umbrella of integration, where the Internet serves as the nerve centre for the interaction of multiple media (Figure 1.1).

Figure 1.1 The Concepts of Diversification, Convergence and Integration



Source: Stone (2001, p. 9).

Singer (2004) defines convergence "in its current media context" (p. 3) as "some combination of technologies, products, staffs and geography among the previously distinct provinces of print, television and online media" (p. 3), and she summarises the diverse concepts of the convergence as follows:

> Processes and outcomes vary widely among the markets in which the concept is being explored. For some, convergence emphasises information sharing. For others, it involves newspaper reporters taping a voiceover for a newscast, or television reporters phoning in breaking news details to update a website. In a few markets, journalists gather information that they turn into an immediate online story, a package for the evening news and an article for the next day's paper. Convergence can mean working in separate buildings—or at adjacent desks (p. 3).

As Domingo (2006, p. 74) noted, a digital environment for news production has made it possible for journalists to deliver news content through several coordinated outlets by combining media formats. Similarly, Saltzis and Dickinson (2008) define multimedia journalism more concisely as "journalists producing output for more than one medium at a time" (p. 225). Table 1.4 shows definitions of terms this study employs.

Table 1.4 The definitions used in this study (Modified from Aquino, 2002, pp. 83-84)

Terms	Definitions
Digitalisation	The process of switching from analogue to digital technology in a newsroom infrastructure.
Digital newsroom	Newsrooms using digital technology and techniques to transfer, edit and compile material for transmission. There are varying degrees of digitalisation available to newsrooms.
Multimedia	The publishing of material across more than one outlet.
Multi-skilling	People performing more than one form of journalism simultaneously. Previously, these separate functions were carried out by different staff members who had separate training regimes and skills bases, such as print, web or broadcast journalism.
Multitasking	The carrying out of two or more tasks at the same time by one journalist.
Convergence	Combination of technologies, products, staffs and geography among the previously distinct provinces of print, television and online media (Singer, 2004, p. 3)
Server-based	Material is digitally stored and worked with on hard disks within a newsroom system rather than tape cassettes. This versatile system allows more than one user to work on material at any one time and in some cases is faster than real-time transfer of material.

1.5 The global trend of introducing the digital TV news production system

Among the broadcasting companies mentioned in Section 1.1, this section illustrates the cases of the BBC, Tele5 (Spain) and YLE (Finland), which are considered exemplary and relatively successful (Aviles and Leon, 2002; Aviles et al., 2004).

1.5.1 BBC (UK): for the simultaneous access to the content on the desktop

Having conducted a pilot study called "Jupiter" in 2000, the BBC found what its journalists and newsroom users wished to be realised in news production processes (Hall, 2004, p. 2). The study found that what journalists and newsroom staff valued most was the ability to view media at their desktops; to share material quickly across production items while being able to view metadata such as information on rights, usage, embargoes and locations; to search for and select from current and archive material; and to see the media life-cycle through intake, editing, transmission and archiving.

The Jupiter project

A special solution (called Quantel's generation) was selected in order to provide intake encoding, desktop editing and viewing, craft editing, and the server storage to support the whole. News staff knew that the name of the pilot project, Jupiter, would be carried through to the implementation project (Hall, 2004, p. 2). Accordingly, BBC Technology also took its solution to market as part of a product set (called the Colledia) because it sought to manufacture more than merely a temporary solution for BBC News.

The news production system is designed to record up to 24 simultaneous feeds, and thirteen servers (called sQServers) hold a capacity of 1300 hours of this broadcast-quality content, plus proxy copies of it all. The high-resolution clips can be dubbed to the existing transmission servers and to tape archive. In addition to 20 craft editors on a dedicated network, hundreds of journalists can search, view and edit the proxies at their desktops over the standard newsroom LAN. In addition, this system can keep indefinitely even lower resolution proxies of most content. Access to this archive content from the desktop transforms the selection of footage, enabling review to take place in minutes, rather than hours. This enables the BBC to capitalise on the value of its archives and to manage its media assets more effectively. Considering the quantity of intake and archive, the number of edits and the complexity of rights intrinsic to multiple sources serving national and international outlets on different platforms, only the media asset management (MAM) layer of the system (called the Colledia layer) makes this a realistic scenario.

In particular, the Mediaport (based on an airport analogy of arrivals and departures) is a key part of this new workflow, where content is labelled as it comes in and allocated to a managed story list, and where outgoing feeds are arranged to partners such as the European Broadcasting Union (EBU). Incoming video thereby receives a limited cataloguing up-front, with a subsequent, more thorough labelling as it leaves Jupiter, and this metadata is kept perpetually. It stays associated with the clips through their lifecycle of edits, inherited from their parent clips. The Mediaport integrates copyright specialists, staff from the existing picture desk and archivists with media managers (from the current limited server-based operation) in various new roles.

Jupiter allows simultaneous access to the same content on the desktop across the entire media lifecycle, from intake to archive. Desktop access enables every producer to contribute to work in progress, for more scripts to be written with the associated pictures in view, and for editorial decisions to be made faster than ever before.

1.5. 2 Tele 5 (Spain): for both speed and cost-effectiveness

Tele 5, a Spanish commercial broadcaster, had two goals in going digital: upgrading an obsolete system and employing up-to-date digital facilities to pursue "both speed and cost-effectiveness." In other words, it aimed to increase the newsroom's productivity or the quantity of news stories made every day by journalists (Aviles and Leon, 2002, p. 358). From the design stage, Tele 5's managers, journalists and technicians participated enthusiatically in order to meet the particular demands of individual journalists.

After Tele 5 implemented the digital project, reporters found that they were able to digitise, log and edit their own material recorded in the field, all from their PCs, without any help from technical staff. With the reporters' tracks, they could adjust the audio levels as the computer records their narration at the desktop. Furthermore, the system allowed journalists to access the incoming source material, which is digitally compressed and therefore they became able to make and change the news items directly from their desktops. According to the executives of Tele 5, one of the most difficult problems was to convince the journalists that the digital news production system was being introduced to make their lives more convenient, and to help them

adapt to the new methods. Subsequently, Tele 5 invested in classes to train the newsroom staff in operating the digital technology. However, Tele 5's journalists still had misgivings about the new production system.

In 1997, Tele 5 started the digital transition with the training of journalists in computing skills. Later, it provided a course on visual grammar and picture editing to teach journalists the basic techniques together with some more advanced concepts that would help them to make decisions when they were editing the stories by themselves. Three months prior to launching the digital news production system in live news broadcasts, from May 1998 onwards, some of the stories were edited on computer-based non-linear systems, although they were finally taped for transmission as before. This enabled Tele 5 journalists to get used to the new editing software in a relatively short period. Most of the courses took place in the newsroom, in order to make them more reliable and also to reduce costs.

The technical requirements placed on the journalists increased in the first few weeks after the installation of the system. However, with training, the amount of time spent on technical matters in order to become acquainted with the system was shortened, and this allowed reporters to pay more attention to better journalism. Tele 5's digital newsroom encountered several complicated situations during its first month of operation, in September 1998. On the very first day scheduled for digital broadcasting, just three minutes before one of the daily news programmes was going on air, the screen which shows all the stories to be broadcast went black. If it had not been for a backup copy of all the items on tape, the producers would not have been able to complete the programme without viewers noticing.

Management at Tele 5 said they introduced the digital TV news production system without making any technical employees redundant by taking the approach of integrating the technical staff into the process of change. The management retrained those who were strictly craft editors and integrated them into a revolving technical team who were responsible for everything from operating cameras to running the control room. According to Aviles and Leon (2002, p. 360), the experience at Tele 5 shows that introducing a digital news production system requires much consideration and preparation by its end-users, including both the journalists and technicians,

although designing the new system which is both powerful and easy to use comes under the control of manufacturers.

1.5.3 YLE (Finland): for full digitalisation of its news post-production operations

Since 2001, the Finnish public broadcaster YLE has been advancing progressively along the route to full digitalisation of its news post-production operations (Harrington and Huovinen, 2003, p. 1). At the same time when post-production was beginning to be digitalised, YLE was also starting the process of migrating to digital TV broadcasting (DVB), and launching a 24-hour news channel (YLE24). With these additional news broadcasts, YLE would need to increase its production capabilities.

For the hourly news broadcasts, a completely new working method was required, using a smaller team that would be trained in newsgathering, editing, graphics and transmission. These new personnel would be called media journalists. It was obvious that a non-linear editing approach would be the most practical, but there was no template for them to follow, so YLE needed to explore a variety of possibilities. Having had experience with other editing products (from Avid), the editing platform YLE chose was the Avid system (called NewsCutter Effects). Over a period of about six months, YLE acquired six new editing suites: three of these were placed in the vicinity of the new YLE24 newsroom and the other three were built to supplement the increased production in the daily news production area (POT EDIT).

At the same time, YLE was also constructing a new media hall that would act as a central location for material ingest and transmission. For this purpose, YLE chose special solutions (called OmniBus), with router control and an automation system. Additionally, two Avid servers (called AirSpace) were installed for material ingest and transmission.

YLE uses two studios for its news broadcasts. Studio 24 is used for the Finnish-language news. Here YLE has two broadcasting desks: a small one-person work point with semi-automation for the hourly news bulletins, and a larger fully manned studio desk for the main news broadcasts. The other news studio, Studio 5, is where YLE

produces its Swedish-language news and two current affairs programmes. For three years beginning in 2001, YLE continued to expand its digital production in the YLE news and current affairs department. In autumn 2001, YLE installed additional news production systems (including AirSpace, MediaBrowse and Unity for news production systems, all from Avid). Since then, YLE has increased its editing capacity to include thirteen Avid systems (NewsCutter FX) and slowly moved the majority of its broadcasts to server-based transmission (using both OmniBus Columbus and Avid iNews ControlAir).

Editing by journalists at the YLE TV newsroom

Using desktop PCs, journalists have viewing access to all the material stored in MediaBrowse. In addition to just viewing (browsing) these materials, journalists can choose the shots they want and save them as an edited sequence. MediaBrowse is flexible enough to allow the user to create relatively specific, yet simple, edits.

When this sequence is "conformed", it causes the equivalent high-resolution (hi-res) video material to be transferred from the AirSpace video servers to the Unity shared storage, where it can be accessed for final editing on any of the NewsCutters. Conformance material is transferred to Unity at speeds typically three times greater than real time. A common problem YLE has encountered when journalists are conforming their edited sequences is either insufficient or excessive amounts of material. This varies greatly depending on the individual journalist and his or her familiarity with the software as well as basic editing techniques and requirements. YLE stores browse-quality material for varying periods of up to 30 days – usually for the same length of time as the equivalent hi-res material is stored on the video servers, or on tape. This is useful for viewing material for archiving purposes or to view material that has already been transferred (conformed) to Unity.

Editing by journalists has been implemented best in the foreign news department where the majority of the material they require is available to them at their desktop (workstation). As they write the text, journalists can simultaneously (in association) edit the required video footage into approximately 40-second segments, which a media journalist or editor finalises (normally requiring only additional audio work)

and then transfers to the transmission server. Editing by journalists is also useful for live events that are recorded to the servers.

In addition to the foreign news department, the news coordination department uses MediaBrowse as a key work tool in selecting specific material from feeds, naming this material and transferring it to Unity to be accessed by other users. Media journalists also use MediaBrowse to select their material for additional editing in NewsCutter. All picture editors are familiar with MediaBrowse but they primarily use NewsCutter for their editing requirements.

1.6 Introducing the digital TV news production system in Korea

Korea is one of the leading countries in digital infrastructures such as broadband penetration, where Korea ranked first in a study examining broadband penetration, price and speeds in the 30 top-performing countries in 2008. In Korea, TV news competition is extraordinarily fierce among the established terrestrial TV broadcasting companies and newsroom digitalisation appears to be part of the battle for prominence.

1.6.1 KBS: postponed the digitalisation project again and again

KBS (Korean Broadcasting System) is the premier broadcasting station and the biggest of the three major television networks in South Korea (henceforth, Korea). This public broadcaster, which was established in 1926 and started the first radio broadcasting service in Korea (JODK), currently has a network of eighteen regional stations and eight subsidiaries nationwide and overseas. As a multimedia group, KBS operates a national terrestrial channel, FM and AM channels, a standard FM channel and four cable channels. In addition, KBS has eighteen stations across Korea and eleven permanent overseas bureaus (London, Paris, Berlin, Moscow, New York, Washington, Los Angeles, Tokyo, Beijing, Shanghai, and Sao Paulo). In addition, with service arrangements with the BBC (UK), NHK (Japan) and CCTV (China), KBS delivers a variety of news programmes including the main 9 o'clock News.

By legislation, KBS receives public funding from the government. Although it is managed independently, KBS is generally considered to be influenced by the government, owing to the procedure by which its president is appointed. As stipulated in the Korean Constitution, the President of KBS is recommended by its board of directors to the President of Korea. Political parties in Korea have rights to designate members of the board of directors of KBS. Since the President of Korea usually has leadership over the members of the ruling party, the President of KBS is regarded as being designated and appointed by the president of Korea. This procedure, which prompts concerns about political interference in KBS's governance, has provoked many controversies over the need to establish an improved procedure for this appointment. Around 37.8% of KBS's revenue comes from a mandatory Television Licence Fee, while 47.6% of the revenue comes from commercial advertisement sales (as of 2008).

In June 2003, KBS introduced a digital news archive system for International News as a pilot project before implementing the full digitalisation of the TV news production system. The archive system was provided by the vendor Samsung SDS, a subsidiary of the Samsung Group. KBS invested approximately £1.35 million (GBP) in its archive system. In April 2007, KBS started its digital system, which was introduced experimentally in the form of a pilot scheme.

A project manager for the innovation of the KBS news production system said, "when the digital TV news production system is introduced successfully, KBS journalists will be able to write news stories, while editing their relevant pictures." He added that "the digital system will shorten news production time to one-third of the present time" (IT6, interviewed on 7 September, 2007).

He added that KBS plans to replace all its analogue video cameras by HD (High Definition) digital ones by the end of 2009. In addition, it is going to refurbish two sub-control rooms, which are not yet digitalised, among three sub-control rooms in the news centre. The manager, who without giving a reason resolutely refused to be audio-taped before the interview, said that "newsroom digitalisation is now in the embryonic stage even in the advanced countries."

Most of the digital equipment for TV news broadcasting is now being developed. These factors seemed to make the processes of TV newsroom digitalisation in KBS much more difficult. When we procure a certain new model of digital news production system, it will soon become an obsolete technology because system providers are constantly developing and advancing their system to survive in the fiercely competitive its market (interviewed on 7 September 2007).

Accordingly, the members of the staff who were responsible for implementing newsroom digitalisation inevitably encountered difficulties, since they were blamed for the failed procurement. Subsequently, managers of KBS postponed their project again and again, and waited for the new management who would replace them by other staff members. Table 1.5 illustrates the plan of KBS to digitalise its news production.

Table 1.5 Road Map for digitalisation of KBS TV news production system

Time	Project
April 2003	Pilot digital system (budget £ 1.35 million) for international news. This system failed because of slow speed, inefficient file management, and a complicated process for data searching.
July 2007	Started HD Broadcasting
Early 2008	Pilot project (budget £ 0.5 million) for the fully digitalised newsroom is in progress focused on culture news.
Late 2009	Full digital newsroom (scheduled time)

1.6.2 MBC: the probability of the digital newsroom has been lessened

MBC (Munhwa Broadcasting Corporation), a public service broadcaster, is one of the three major Korean television and radio networks. MBC, whose main shareholder is the Foundation for Broadcast Culture, a government-funded institution, operates on advertising revenue. The corporation currently has a network of nineteen regional stations and nine subsidiaries nationwide. In addition, as a multimedia group, MBC operates a national terrestrial channel, FM and AM channels, a standard FM channel and four cable channels, three of which are broadcast by satellite. MBC delivers several news programmes including the main 9 o'clock News (the "MBC Newsdesk") and has nine permanent overseas bureaus (London, Paris, Berlin, Moscow, New York, Washington, Los Angeles, Tokyo, Beijing) and service arrangements with Reuters TV in UK, CNN and NBC in the United States.

MBC had its origin in the Pusan Munhwa Bangsong (Pusan Munhwa Broadcasting Corporation; Pusan MBC), the first Korean private broadcasting corporation, established in 1959, in Pusan. Pusan MBC started its service with 1 kW AM radio and is renowned for having used music in advertising for the first time in Korea. Pusan MBC launched MBC (in Seoul, the capital of South Korea) in 1961 with a small AM radio broadcaster. It began television broadcasting on 8 August 1969 and FM radio broadcasts in 1971. The National Assembly established the Foundation for Broadcast Culture on 26 December 1988 to make MBC independent of political influence.

In March 2005, MBC enthusiastically formed a digital newsroom project team under the full control of the Editor-in-Chief. However, the introduction of the digital newsroom has been suspended for an indefinite period. For years, MBC has suffered incompetent management owing to its decreased advertisement revenue. In addition, MBC plans to move its headquarters to the "Sang-am digital complex" in 2011. Accordingly, the enormous cost of building the new headquarters will have to be met by MBC, which had already paid out a large sum of money to purchase the land from the Seoul city authorities. Finally, in February 2009, MBC announced hundreds of redundancies and the closing of several overseas bureaus. The probability of MBC implementing the digital newsroom in the near future has been lessened. Table 1.6 shows the initial project to digitalise the MBC newsroom.

Table 1.6 Road Map for digitalisation of MBC TV news production system

2000	A server system for transmission was introduced in the Sport News division for implementing a digital newsroom
2004	Signed Memorandum of Understanding with Sony Korea for newsroom digitalisation
2007	Nonlinear editing. 15 sets to be purchased
December 2007	Tapeless HD cameras to be purchased
Early 2008	Select Panasonic P2HD digital camera after testing a variety of models for three years
2008	Replace existing editing system with nonlinear editing system
2009	Ingest Rooms in operation Digital News in operation Replace SD cameras with HD cameras Nonlinear editing using tapes as backups
2010	Launch HD digital broadcasting Replace completely with HD cameras
2011	Move to the new headquarters

2011-2012	Introducing a fully integrated HD digital newsroom Employ NRCS (newsroom computer system) Operate Proxy and EDL (simple picture edit by journalists) Innovate the workflow of News production

1.6.3 SBS: the pioneer of newsroom digitalisation in Korea

Established in 1990, Seoul Broadcasting System (SBS) is Korea's only private broadcasting company that has a nation-wide network. Operated by Taeyoung Construction Company, SBS is a multimedia broadcaster operating TV, radio and terrestrial DMB (Digital Multimedia Broadcasting, a hand-held TV programme service broadcast by satellites or terrestrial wave) in cooperation with nine regional private broadcasting companies. SBS Holdings and SBS group includes six subsidiaries, SBS Digital Forum and SBS Broadcasting Academy. SBS, the only listed terrestrial broadcasting company in Korea, has international bureaus in the US, Europe and Asia and has established partnerships with leading broadcasting stations in Japan, China, France and Taiwan. Since it began terrestrial broadcasting of radio and television in 1991, SBS maintains that it has always highlighted the human elements in corporate management, in particular through digital technology.

SBS moved to the new Mok-dong SBS Centre in March 2004. The Centre, the heart of the SBS multimedia group, was built to lay the foundation for digital broadcasting and to establish an infrastructure for an era when the Internet, wireless communications and broadcasting have converged. SBS owns and operates three cable and satellite TV channels (sports, golf, and drama).

Table 1.7 News and Current Affairs Department (in 2008)

Departments	News coverage	Number of Journalists
Political News	President, Prime Minister, National Assembly, Diplomacy	20
Economic News	Ministries of Finance and Economy, Business such as the Samsung Group	20
General News	National Defence, Police Headquarters, Seoul City Hall,	25
Regional News	News of the regions	15
Cultural News	Music, arts, science	15
International News	Overseas news from correspondents	15
Internet News	Website news management	5
Future & Vision	Organising the annual international	5

Division	conferences 'Seoul Digital Forum' and 'Future Korea Report'	
News Editing One	'Main 8 o'clock news' and 'Daytime news'	10
News Editing Two	'Morning news' and 'Nightline news'	10
Total *		140

*The News and Sports Management Team (10 people) is excluded due to their non-journalistic jobs.

Drawing a viewing audience of around 43 million people, almost Korea's entire population, SBS produces six daily news programmes including the 6 am News ("SBS Morning Wide", 30 minutes), 9.40 am News ("SBS News and Life Economy", 20 minutes), 5.30 pm News ("Metro News", 10 minutes), the 8 pm News (the "8 o'clock News"), 9.45 pm News ("Headline News", 5 minutes) and 11.50 pm News ("SBS Night Line", 10 minutes). The "8 o'clock News" is the main and longest nightly newscast of the SBS news programmes. This news programme is also the only newscast that consists mainly of reporter packages. Table 1.7, Table 1.8 and Table 1.9 show the personnel organisation of the SBS News and Current Affairs Department.

Table 1.8 Feature News Department

Feature News 1	Current Affairs Talk Show	10
Feature News 2	Investigative Reports	12
Total		22

Table 1.9 Sports Department

Sports News	Sports News	20
Sports Programme Production	Live Sports	25
Total		45

SBS set up its digital news production system and began broadcasting all its newscasts digitally in June 2004. It was the first digital TV news production system in Korea. SBS is very proud that its digital news production system was evaluated as a monumental feat by fellow broadcasting companies not only in Korea but also around the world. As briefly mentioned in Chapter 1, during the 2005 DAM (Digital Asset Management) Symposium in London, SBS was recognised as having "best practices in news production and archiving among the 353 of the world's broadcasting companies that have implemented digital asset management" (Megler and Estrada, 2005, p. 3). In addition, SBS became the first in the world to fully produce and store

news digitally, with the broadcast of the Athens Olympics in 2004 using IBM's Digital Media Centre solution.

In a competitive news environment, SBS tried hard to score the top ratings. However, it has been at the bottom or second among three national networks since it was launched. To achieve higher ratings, its news stresses immediateness and constant updates. SBS is the only commercial broadcaster in Korea, and consequently its organisational culture is much more profit-oriented, innovative and visionary than that of its rivals, KBS and MBC.

To replace obsolete analogue VTR equipment, SBS constructed its digital news production system in mid 2004. The SBS system is a completely tapeless production process. Moreover, its reporters carry notebook computers around to write news stories and record their voiceovers on site. Such mobility allows SBS to outpace its competitors in news immediacy.

At the time when SBS managers decided to adopt NDS, none of them had doubts about the success of the project. There were many good reasons for them to be sure that the SBS newsroom would be digitised smoothly. In particular, their judgment seemed to make sense in view of a variety of circumstantial evidence as follows. Firstly, the SBS top leaders, in particular, the Chairman of SBS media group, Yoon Se-young, supported the project wholeheartedly. This is regarded as one of the most important factors for successful diffusion of an innovation. Lin (2007) observes that: "Top management support is particularly important to implement a new production technology like a digital TV news production system with radical changes in stressful news working settings" (p. 168).

Secondly, SBS journalists received high salaries. They drew a monthly salary of 5.19 million Korean Won, approximately equivalent to £2,595 (GBP). In 2006, SBS ranked third among 519 listed companies including Samsung, LG and Hyundai Motors in a survey of salary levels (Mediatoday, 15 August 2006). The annual salary of SBS journalists who have served ten years is one hundred million Korean Won, approximately equivalent to £50,000 (GBP), which is almost twice as much as that of ordinary newspaper journalists. Thanks to the high salary, SBS journalists are known

to be devoted to their duties. In July 2008, when SBS advertised for three competent journalists, hundreds of reporters from other news organisations, including major newspapers, in Korea applied (Mediatoday, 10 July 2008). The large number of reporters who enter into competition to be SBS journalists through annual entrance examinations illustrates how SBS commands popularity in the Korean journalism job market. Every summer more than ten thousand university graduates apply to join SBS, which recruits fewer than ten apprentice journalists. Consequently, there was a view that the journalists would be committed to the changes.

Thirdly, since SBS was launched in 1990, its employees tend to be younger than those of rivals such as KBS and MBC, which were established in 1926 and 1961 respectively. As a result, SBS journalists are more likely to adopt the new technology like NDS. As stated above, Korea is one of the leading countries in digital infrastructures such as broadband penetration. In a study carried out by US-based group ITIF (the Internet Technology and Innovation Foundation), the broadband rankings for 2008 found that Korea enjoys an average download speed of 49.5 Mbps – ten times faster than usual transfer rates experienced in the US (4.9 Mbps).

Fourthly, SBS management was very keen on digital technology. We can recognise their progressiveness from the fact that since 2004, SBS News headquarters has organised the Seoul Digital Forum (SDF), which is a major international conference in Seoul, Korea, addressing innovation in the digital world. Each year, the event attracts many of the world's most influential people from industry, government and academia to explore the progress of the digital revolution and collaborate in shaping its future. Participants in the SDF held in May 2008 included executives from global companies, opinion leaders, artists, as well as policy makers such as; Aubrey de Grey, the British biomedical gerontologist and CEO of Methuselah Foundation and Sumner Redstone, the chairman of Viacom and CBS Corporation. In particular, Bill Gates, the chairman of Microsoft, spoke at SDF and presented his ideas on the future of software and how humans will interact with it. In SDF 2007, Tom Curley, president and CEO of Associated Press and former president and publisher of *USA Today*, and Eric Schmidt, the chairman and CEO of Google, were keynote speakers. In addition, in 2006, Steve Ballmer, CEO of Microsoft Corporation, attended the forum as VIP speaker. Others have included Al Gore, former Vice President of the United States;

Michael Powell, former chairman of the US Federal Communications Commission in 2005, and in 2004, Nicholas Negroponte, a professor of the MIT Media Lab.

1.7 Gaps of previous studies and focus of this study

As far as newsroom digitalisation is concerned, since it remains in the "embryonic stages" of development (Klinenberg, 2005, p. 62), researchers have paid little attention to the process of implementation of the digital news production system. Furthermore, no study has examined newsroom digitalisation in terms of the relationship between the resistance of journalists against innovations and strategies to overcome it from the journalists' point of view.

While Lin (2007) investigated the process of newsroom innovation in four Taiwanese TV newsrooms, she mainly concentrated on the "intra-organisational" process of adoption and implementation of TV news digitalisation, and examined the influence of the context of Taiwan's TV news industry mainly from a managerial point of view (p. 4). In contrast, this study examines the implementation process from the journalists' standpoint, focusing on how journalists accepted and responded to management's strategies towards organisational changes during the digitalising of the news production system.

In particular, this study endeavours to examine how the resistance, which was caused by the ensuing innovations (e.g., in this study, alteration of job descriptions, and introduction of a Command Room, an Information Support Centre, and a GPS system, see Chapter 1, p. 8), influenced the process of implementation of newsroom digitalisation, which originally was the main goal of the newsroom innovation project.

Furthermore, the study also investigates how to develop implementation strategies to enhance user involvement and reduce resistance, and how arousing desirable responses to innovation is significant in preventing users from being reluctant to accept technology or sabotaging it. Usually when ensuing innovations are not welcome by journalists, newsroom digitalisation per se cannot be implemented smoothly. Accordingly, the researcher concentrates on the factors'which promoted or impeded the project of newsroom digitalisation. In addition, he focuses on the

relationship between newsroom digitalisation and the ensuing changes, in particular, changes of the organisational structure and work practices.

In sum, this research is designed to investigate how the newsroom of SBS in Korea introduced the digital TV news production system into the SBS newsroom in terms of the organisation and in terms of the journalist. In addition, the research also aims to explore the implications in the news production process after newsroom digitalisation focusing on changes in the SBS newsroom organisation, multi-skilling, and the issue of the value of journalism.

As mentioned above, digitalisation of TV news production systems is an increasing trend in the world broadcasting industry, but implementation of the digital news production system is a task of extreme difficulty. SBS is the only case of the introduction of a full-scale digital news production system among Korean TV broadcasting companies. This is why SBS was chosen as the research site of this study. In this study, a digital TV news production system is defined as a system that digitalises news coverage (writing and shooting), news editing, news broadcasting, and news storage equipment as well as creates a tapeless news production process. The research questions will be discussed more fully later on.

1.8 Study procedure and data sources

Data for this empirical study was collected via in-depth interviews, a questionnaire survey, participant-observations and in-house document analysis. The researcher carried out fieldwork at the SBS newsroom from the beginning of May to the earlier part of September 2007. He observed newsroom operation in each facility, attending editorial meetings and interviewing journalists. In all, 33 people were interviewed at SBS, including journalists, editors, deputy editors, presenters, engineers and three external experts (see Appendix 5, EX1, EX2, and EX3). Interviewees were selected according to their functions and their degree of involvement in newsroom digitalisation, so that they would represent the journalistic, managerial, and technological areas of the process. Face-to-face interviews lasted an average of 45 minutes. Some essential interviews were updated and completed by emails in

September and October 2009 to reflect recent changes and development. All interviewees were granted anonymity and confidentiality.

The questionnaire survey was composed of established construct measurement instruments drawn from scholarly research published in peer-review journals, and it incorporated a small number of demographic and organisational background items. Only TV journalists were provided access to the questionnaire survey: cameramen, picture editors and assistant staff were excluded. Accepted statistical procedures in SPSS 15.0 for Windows were employed in the data analysis.

1.9 Organisation of the thesis

This thesis is divided into seven chapters. Chapter 1 provides an introduction to the study. It deals with the global and Korean trend of introducing the digital TV news production system, review of existing research on digital news production, study procedure, data sources and their contribution. Chapter 2 critically reviews the research literature on newsroom digitalisation, focusing on its process and implications. This chapter outlines research on TV newsroom digitalisation, and multi-skilling and newsroom convergence concentrating on the literature of leading scholars.

Chapter 3 illustrates research questions and explains the methodology of this study, which examines the diffusion of the digital TV news production system in the SBS newsroom in Korea. The major problems that this study has to investigate are:
1) the process by which SBS introduced the digital TV news production system into the SBS newsroom in terms of the organisation; 2) the process by which SBS introduced the digital TV news production system into the SBS newsroom in terms of the journalist; 3) specific changes that occurred in the SBS newsroom after adoption of the digital TV news production system.

These problems require the inclusion of types of evidence that provide a grasp of the fundamental attitudes of the journalists towards the digital news production system and the reasons for the limited success in making journalists accept the innovation. For this purpose, this study conducted an extensive review of appropriate trade

journals to provide backgrounds and contexts for the study of the NDS (News Digital System) project.

Chapter 4 investigates the process by which SBS introduced the digital TV news production system into the SBS newsroom in terms of the organisation. This chapter analyses the qualitative data collected from interviews, group discussions, observations and in-house documents, and also quantitative data from the questionnaire survey, using Rogers' (2003) model of the innovation-decision process. Chapter 5 explores the process by which SBS introduced the digital TV news production system into the SBS newsroom in terms of the journalist.

So as to identify what specific changes, if any, occurred in the SBS newsroom after adoption of the digital TV news production system, Chapter 6 discusses the impact of digital system implementation on the news production process, focusing on the method of newsgathering and picture editing. This chapter also discusses the changes in the job descriptions of several staff members such as a TV news presenter, a picture ingest crew and personnel for picture storage. This chapter also examines changes in the quality of news after newsroom digitalisation, and explores the impact on the value of journalism as well. Chapter 7 presents the conclusions drawn from the research and its potential implications for future research. The discussion includes identification of the limitations that must be considered when generalising the findings of this research.

Chapter 2 Literature Review

This chapter critically reviews the research literature on newsroom digitalisation focusing on its processes and implications. Section 2.1 outlines research on newsroom digitalisation, concentrating on the literature of leading scholars, and section 2.2 discusses literature on research into digital newsrooms. Section 2.3 discusses resistance to innovations, and section 2.4 evaluates cultural changes in newsrooms. Section 2.5 examines diffusion of innovations and then section 2.6 evaluates the research into attributes and factors affecting innovation diffusion. Section 2.7 discusses implementation strategies for newsroom digitalisation, and section 2.8 reviews investigations into the result and consequences of newsroom digitalisation. And finally, section 2.9 summarises the main points discussed in this chapter.

2.1 TV news digitalisation research

2.1.1 Little attention to newsroom digitalisation

Current research into newsrooms of media organisations has focused on media convergence, multimedia journalism and multi-skilling. By contrast, researchers have so far given little attention to newsroom digitalisation. This relative indifference to digitalisation is inexplicable because a digitalised newsroom forms the technological basis of media convergence, multimedia journalism and multi-skilling. A great many researchers make it clear that digital technology enables a variety of new media phenomena. For instance, Lawson-Borders (2003) regards convergence as "the window of opportunity for traditional media to align itself with technologies of the 21st century" (p. 91).

In other words, it is the digitisation of media and information technology as well as the ensuing transformation of communication media that mainly contributes to convergence (Fidler, 1997; Gershon, 2000). In addition, Aviles and Carvajal (2008, p. 222) observed that the digitisation of news production systems provides the technological foundation of newsroom convergence. In particular, researchers agree that digitisation does not lead to cross-media cooperation in itself. However, it

significantly "enhances its possibilities," in view of the fact that immediate sharing of content becomes possible by a digital production system, in formats that are ready for editing and republishing within the same newsroom. In the same manner, what enables multi-skilling to be developed is the digital technology that compresses information and allows text, graphics, photos and audio to be transmitted effectively and rapidly across diverse media platforms.

Lack of attention to the digital newsroom has left unsettled the question as to which TV station implemented digitalisation of a news production system for the first time in the world. According to Aviles et al. (2004), digital technology was first introduced at the BBC Political Unit at Millbank in London in 1992. However, Boyd (2001) maintains that it was in 1996 when the British television station, Independent Television News (ITN), created the world's first digital newsroom in the true meaning of the term. He notes that ITN's journalists functioned in "a completely tapeless newsroom where packages are composed and edited on desktops using the most up-to-date automation system and server-based technology" (p. 288).

In contrast with Boyd (2001), Aviles et al. (2004) consider that ITN implemented digitalisation in 2000. They regard the Finnish public service broadcasting company (YLE), which introduced a "digital automated system in 1996" (p. 99) as the pioneer of newsroom digitalisation. On the other hand, Boczkowski and Ferris (2005) insist that the newsroom of KHNL-TV Honolulu, Hawaii, was "the world's first all-digital newsroom" (p. 107) which was launched on 17 April 1995, as a joint development with Avid Technology, one of the leading vendors of the digital news production system. Pavlik (2001) also agrees with this view, quoting Alex McGehee, executive producer for KHNL-TV, who says the digital news production system (the Avid System) allows the newsroom to "get out of the linear age" (p. 107).

This discrepancy is, in most cases, caused by the fact that there is no clear definition of the "digital newsroom." In the same way, this ambiguity in the definition is evident in the growing body of literature on "digital journalism." Although considerable research has been conducted on the topic of "digital journalism", there are few studies that deal with the digitalisation of the newsroom. In reality, most studies under the title of "digital journalism" or similar titles were conducted on subjects such as

"online journalism", "web journalism", "multimedia or convergence journalism", and "multi-skilling." Table 2.1 shows some literature on "digital journalism" and similar topics. Among those studies, Lin's doctoral research (2007) might be regarded as a representative one that investigated the process of TV newsroom digitalisation with a theoretical framework to analyse its data.

Table 2.1 Literature on topics related to digital journalism

Researcher	Title	Content
Lin (2007)	TV news digitalisation in Taiwan: an intra-organisational model of information technology adoption and implementation	digitalisation of a newsroom
Quinn (2005)	Convergence's fundamental question	convergence journalism
Aviles et al. (2004)	Journalists at digital television newsrooms in Britain and Spain: workflow and multi-skilling in a competitive environment	digital journalism & multi-skilling
Deuze (2004)	What is multimedia journalism?	online journalism
Singer (2004)	Strange bedfellows? The diffusion of convergence in four news organisations	convergence journalism
Gordon (2003)	Convergence defined, in digital journalism	convergence journalism
Kawamoto (2003)	Digital journalism	online journalism
Singer (2003)	Who are these guys?	online journalism
Aviles and Leon (2002)	Journalistic practice in digital television newsrooms	digital journalism & multi-skilling
Cottle and Ashton (1999)	From BBC Newsroom to BBC Newscentre	digital journalism & multi-skilling

2.2 Research into digital newsrooms

2.2.1 Multi-skilling increased pressures on journalists

Some researchers have investigated these shifting work settings in both Britain and Spain focusing on the implications of multi-skilling practices. First of all, investigating the experience of the BBC Newscentre in Bristol, UK, Cottle and Ashton (1999, p. 38) found that while digital technologies have undoubtedly facilitated changed working practices as the means to achieve cost savings and efficiency gains, increased pressures of work relating to multi-skilled practices and multimedia news production are unlikely to encourage radical new directions in programme making. They illustrated how digital news production is socially and

culturally shaped by corporate and professional contexts and practices (Cottle and Ashton, 1999, pp. 22–43). In particular, they found that the new digital technology did not give rise to new ways of telling news stories, but on the contrary, it led to more standardised, recurring formats which led to a more superficial commitment in the stories covered.

On the other hand, Cottle and Ashton (1999) maintained that the most important element of digitisation was workflow. They insisted that news items can be changed fast and without difficulties as well as being easily adjusted to subsequent newscasts. They found that with the development of these technologies, journalists were expected to be able to utilise a number of different skills and perform a number of separate tasks and that jobs were "re-designated in line with the shift from single-media to bi-media, to multimedia production" (p. 32). In addition, they discovered from their ethnographic analysis of a digitised BBC newsroom in Bristol, that many journalists were frustrated with the expectations of professional "multi-skilling" inherent in the introduction of the then current digital technology (p. 34).

Four years later, Cottle (2003) argued that the process of introducing technology into the media organisation is "the result of interactions between the experiences of workplace actors, the history of the local workplace, and national and global institutional and social contexts" (p. 60). This view shows clearly Cottle's deep-rooted concern about how the technology can affect journalism negatively. In other words, technological innovation ultimately makes journalists who put value on true journalism find it more difficult to cope with the pressure from their employers. He makes this perspective clear in the study of politics and power struggles that occur around newsroom reorganisation by concluding that the interaction of these relations consequently has made management "the primary beneficiary of technological innovation, in particular, through increased control over negotiation processes" (Cottle, 2003, p. 61).

Following Cottle and Ashton's (1999) research, Ursell (2001) examined changed journalistic practices after the full import of digital and electronic technologies was realised at three British television newsrooms: the BBC, ITN and Yorkshire Television. They were all news broadcasting companies, but the markets in which

they operated, the scale of their production system and their levels of technological development were respectively different. Ursell (2001, p. 194) stated that "demand for and pressures on journalistic staff had increased in all three." In her later research, she found that employment and working conditions in the production of journalism-based television programmes in Britain had worsened, with negative consequences for the quality of the output (Ursell, 2003, p. 38). In addition, she attributed this phenomenon to the technological and organisational change characterised by new digital technologies of delivery and production (p. 32).

In their analysis of the implementation of the digital news production system at two commercial Spanish television newsrooms, Aviles and Leon (2002, p. 367) argue that the "new system has enabled journalists to take direct control over the process of producing a news package and it has increased their responsibility." In addition, these authors discuss the trend in multi-skilling and the increase in the workload that television journalists have to cope with.

Examining the process of TV news digitalisation at ITN, Francis (2002) insists that there are presumably "two main managerial themes driving the digital news movement: speed and empowerment" (p. 1). According to him, speed means speeding up the process of taking news pictures to air, using the now well-known advantage of server-based production. On the other hand, empowerment means allowing everyone in the production train access to media and simple but effective tools to carry out their tasks. He emphasises the significance of the fact that whoever they are – journalist, producer, camera operator, picture-editor, archivist or manager – everyone is able to see and manipulate news media at their own desk. He points out that those who were not previously included in the direct production process due to lack of skill or access can now be fully involved. Francis (2002) showed that this involvement is "one of the key issues underlying the 'digital conversion' process" (p. 1), and is an issue overlooked by many broadcasting companies. Warning that we should not believe that the problems of digital news production are entirely rooted in engineering, and that manufacturers have the power to solve everything, he notes that some of the biggest questions have less to do with engineering and more to do with the people and the processes they have evolved.

Supporting Cottle and Ashton's (1999) view that new digital technology is an attribute in the changing news environment, Hemmingway (2005; 2008) examined the implications of the implementation of a new technology known as Personal Digital Production (PDP) – a system that requires a TV news journalist to have an ability to report, shoot and edit his/her own news material. She argued that the PDP system, which was introduced across the BBC's regional newsrooms, represents a significant technological development of digitisation and multi-skilling practices because "it enabled a single worker, whether a journalist, production assistant, videotape editor or camera operator, to film and edit material for transmission" (Hemmingway, 2005, p. 8). She maintained that the PDP system was implemented by the BBC to "revolutionise the entire news production process by eradicating established separate production roles" (2005, p. 8).

2.2.2 The path to newsroom digitalisation

Finnish scholars Harrington and Huovinen (2003) investigated the path to full digitalisation of the news production operation in the newsroom of the Finnish public broadcaster YLE. They examined the process of innovation, which had taken over five years. The researchers describe the stages experienced and the problems encountered, and incorporate the observations of one YLE journalist who watched the development meticulously.

In his essay entitled "Does digital mean better news?" the YLE journalist, Harri Palmolahti of the Workflow Development Department, noted that he was worried about the absence of basic journalism itself. He said that he quite often heard an argument that the new digital tools would save time and working effort and, hence, journalists would be able to put more effort into the quality of the journalism. However, he saw it differently. He insisted that whatever time journalists saved through technology, they spent on increasing production output. Palmolahti pointed out that while almost 20 years earlier, when he had started in TV news as a reporter, he had only had one news broadcast each evening to worry about, today, he has about 30 news broadcasts, teletext, an Internet service and a mobile phone service, and probably some other services which he hadn't even heard of then. Insisting that "the quality is suffering or likely to suffer in the future," he concluded that if it did, it

might be in rather different and astonishing ways (Harrington and Huovinen, 2003, p. 9).

In Romania, Radu and Surugiu (2006) examined the digitalisation in Romanian media companies with respect to whether PC-centred newsrooms are born or trained. The researchers suggested that digitalisation of the news production system caused some jobs to disappear. For example, the typists were superseded by computer operators. Some new jobs came into existence and researchers exemplified this point with the fact that every newsroom now had specialist IT support. Radu and Surugiu (2006) found that, depending on their age, the journalists had a different relation with the computer. For example, there was a "nostalgic perspective" (p. 3) on handwriting, editing on paper or on hard copy and working with analogical devices. By contrast with the nostalgic journalists (those aged 40 years or older), younger journalists "enjoy discovering functions of new software and doing new things with technology, but get bored in the classroom" (p. 3). They noted that "some of them feel they do not need extra training to use the new technologies, others admit that structured knowledge in this area is very much needed" (p. 3).

Radu and Surugiu (2006) suggested that "by using the new technologies, the quality of media products may improve, but the lack of training (either because the newsroom staff feel there is no need to, or because there is no available training they know of or can afford, because of time and money pressures) and the new devices, that have too many functions, make the production process slower and the human errors increase, in some cases" (p. 3). They pointed out that some journalists feel that "the universities do not have the proper programmes in the usage of new technologies, even if they are expected to" (p. 3).

2.2.3 Changes in job descriptions

The Finnish researchers Rintala and Suolanen (2005) examined the implications of digitalisation of radio and television news production in terms of job descriptions, competencies and the quality of working life. They found that changes in job descriptions could be caused by transferring tasks from one description to another, by fusing two or more tasks or by adding new tasks to traditional job descriptions. Their

findings suggest that changes in competencies are instigated by the digitalisation of production technology, changes in job descriptions, the emergence of new media and new working practices.

In Belgium, Johnsen (2004) approached digitalisation from the perspective of job descriptions, competencies and job satisfaction in the implementation of an Internet application and a video journalism system. He found that the technological implementation especially of video journalism was accompanied by the redefinition of jobs. A job description of the video journalist was formed, which included tasks that had previously been performed by journalists, cameramen and video editors. Changes in job descriptions raised questions about the quality of outputs, for example, as well as the stressfulness of work, the amount of workload, pay, skills and the future of the jobs of cameramen and video editors.

2.2.4 Research on convergence

There are a few studies on convergence which are applicable to the study of newsroom digitalisation. Considering the rarity of research on digitalisation, in particular, on the process of newsroom digitalisation, these studies provide significant insight into the introduction processes of the digital news production system. Among those researchers, Quinn (2005, pp. 36-37) suggests several key factors related to newsroom convergence, most of which can be applied to newsroom digitalisation. Firstly, he lists "management buy-in," which means that management convinces journalists that the employers support and expect convergence. Support of management is the critical factor in newsroom digitalisation process as well.

Secondly, he emphasises "a change of mindset" (Quinn, 2005, p. 36), which is an additional factor typical of newsrooms that have successfully implemented convergence. He cites a Norwegian editor who said: "Today's journalist should say: I'm not working in a newspaper, I'm working in news" (Quinn, 2005, p. 36). Thirdly, newsroom managers should know that technology is just "a tool for doing better journalism" (Quinn, 2005, p. 37), and that to utilise these tools efficiently management should provide training, which needs an investment of time and money.

These are the very words not just for convergence but also for newsroom digitalisation.

Regarding the barriers to convergence, Quinn (2005, p. 35) illustrates several factors which impede or delay the convergence process. Among them, trade union concerns for their members' future can be an obstacle for media convergence as well as for newsroom digitalisation. In particular, as Aquino (2002) notes, one of the most important problems with convergence is the "lack of adequate business models" (p. 8).

On the other hand, Quinn (2005, p. 35) draws on Gentry's (2004) examination of a continuum between "easy" and "difficult" introduction of convergence. Factors helping "easy" convergence included a focused leadership, the same owner, a flexible culture, co-location of media outlets, previous relationships between potential partners and no unions. Difficult convergence arises when the organisation has different owners, other leadership priorities, multiple managers, inflexible or dissimilar cultures, disparate locations and the presence of unions. Gentry (2004) said that in reality easy convergence cannot be expected. Although a few factors, such as the same owner, are not applicable to newsroom digitalisation, the remarks on difficulty of convergence can be exactly applied to the newsroom digitalisation. Quinn (2002) suggests that access to suitable technology, worsening economic situation, a flexible attitude among editorial managers and journalists, and the existence of rivalry in the market contribute as well (p. 62).

2.2.5 Korean research on newsroom digitalisation

Korean research on newsroom digitalisation is still at the embryonic stage. Although the digitalisation of TV newsrooms attracted the attention of several researchers, little research has been conducted in the significant emerging arena of TV news digitalisation. Furthermore, few have focused on the adoption and implementation of this digital technology within the stressful setting of news production.

First of all, Lee Sun-myung, the vice-president of an SBS affiliated company, who had actually been the head of the NDS project, conducted a case study on TV news digitalisation based on his experiences (Lee, 2004a). Lee focused on the

organisational change and implications of news production practices following digitalisation of the SBS TV newsroom. Lee found that most SBS news staff, including journalists, camera crews and picture editors, adapted to the new digitalised news production systems very well. In particular, he insisted that about three-quarters of news staff (72.6%, n=148 out of 204 people) regarded the new system favourably. Lee noted that SBS news staff regarded picture editing as the most greatly improved area (78.4%), followed by searching library materials (31.2%). However, they still worried about the technological instability of the system (46.8%) and the lack of data storage capacity (35%). In particular, in in-depth interviews with the researcher in 2007, Lee said he found that the level of the organisational changes was estimated as very low by the staff, in other words, the change in the organisation did not match the transition of the technical systems.

In fact, Lee's study mainly consisted of the data of the project conducted by him. In other words, he enumerated data produced during the NDS project. As he stated himself in his conclusions concerning the limitations of his study, he was not able to perform detailed and exact analysis because of lack of time as a part-time student. In particular, he just enumerated data produced during the NDS project. From the academic point of view, the lack of theoretical background has been one of the key reasons why the study was rather limited.

On the other hand, Charles Bebert, who made a study (2006) of the SBS news project "because anecdotal evidence suggested that very innovative operational procedures had been implemented" (Bebert, 2006, p. 26), was not an academic but a consultant who was in charge of Managing Director of Kane Consulting. His study is just an evaluation report, which focused on technological aspects, rather than an academic work. In particular, this study was cited by the IBM commercial websites and this shows that it suffers lack of independence of academic research. Consequently, this study is the only proper research on SBS newsroom digitalisation.

2.3 Resistance to innovations

2.3.1 Resistance and newsroom digitalisation

As shown above, many studies have endeavoured to investigate mainly the impact of TV newsroom digitalisation. However, most of them were just descriptions of the implications of a digitalised newsroom, such as the changed practices (Cottle and Ashton, 1999; Ursell, 2001; Francis, 2002; Bandres, 2003; Harrington & Huovinen, 2003; Radu & Surugiu, 2006) or altered job descriptions created by newsroom digitalisation (Johnsen, 2004; Rintala & Suolanen, 2005).

A small number of researchers (Lee, 2004a; Hemmingway, 2005, 2008; Lin, 2007) have examined the question as to why digitalisation projects encountered resistance from journalists; and how the managements persuaded those who resisted or were unenthusiastic about adopting the innovation; and what were the factors that influenced the process of TV newsroom digitalisation.

Among these, only Hemmingway (2005, 2008) properly investigated the process and the impact of the PDP (Personal Digital Production) system, which was introduced into BBC newsrooms, drawing mostly on the theoretical framework of ANT (Actor Network Theory). Noting that PDP enables a single worker, whether a journalist, production assistant, videotape editor or camera operator, to film and edit material for transmission, Hemmingway (2005) insists that it "promises to revolutionise the entire news production process by eradicating established separate production roles" (p. 8).

On the other hand, Lin (2007) examined the procedures from the management's standpoint, largely ignoring the aspect of the journalists who were the end-users. Similarly, Lee (2004a) mainly summarised project development without any specific theoretical framework, just drawing on his experience as the head of the SBS newsroom digitalisation project, even though he tried to analyse the process of implementation to some extent.

Generally, when a TV broadcasting company decides to introduce a digital news production system, the management would consider as a matter of course changing the organisational structure and work practices as a part of the implementation project. There is no problem at all in this approach, rather it is natural to endeavour to innovate more effectively and obtain excellent results. Regarding this, Rogers (2003) observed that not only is an innovation adjusted to adapt to the organisation, but also "the organisation may be changed to fit the innovation" (p. 424).
Newsroom digitalisation is likely to encounter resistance from journalists. Rogers (2003, p. 426) suggested that drastic innovations create considerable "uncertainty" in an organisation and an "uncomfortable state" that may make potential adopters offer "resistance to the technology" (p. 426). The uncertainty may be either inherent in the technology or in the adoption process. Regarding this, Lin (2007) observes that the project of newsroom digitalisation encounters its inherent difficulties, particularly "the resistance of journalists to innovations" (p. 223), because the adoption of digital technology is subjected to a quite ill-defined and irregular innovation process.

2.3.2 Resistance and newsroom convergence

Saltzis and Dickinson (2008) investigated the impact on the working practices of journalists of the process of news production convergence – the trend towards news reporting in more than one medium in previously single-medium organisations. Through interviews with journalists working in newsrooms at the BBC, Sky News, *The Guardian* and *The Financial Times*, they found that while multimedia news was becoming well established, the multimedia journalist had been slow to arrive. They insisted that this was caused by "the pressures that multimedia working adds to the journalist's daily routine, and a concern over the impact on the quality of output" (p. 216). Regarding resistance to change, Saltzis and Dickinson (2008) note that "established journalists are usually less willing to change what they have been doing in their careers so far" (p. 222).

On the other hand, Singer (2004) discovered that it was not straightforward to make journalists openly admit their resistance to an innovation implemented by their organisation, and she gave an example that the journalists interviewed in her research had been "hesitant to tell a note-taking outsider of their resistance to company policy"

(p. 14). Singer also found that although the journalists admitted there were "clear advantages in the new policy of convergence" (p. 3), the diffusion of cross-media work practices might be impeded by cultural and technical differences in their routines of work and a "lack of training to alleviate concerns about the perceived complexities of new media formats" (p. 3). In addition, citing Gil Thelen, the executive editor of the *Tampa Tribune*, who said that "Cultural resistance is the biggest hurdle for converging newsrooms" (Thelen, 2002, p. 16), Singer regarded cultural resistance as a potential obstacle to newsroom convergence.

Aquino et al. (2002) regard the media industry as an "extremely conservative" one, which remains "strongly resistant to changes" (p. 18). They illustrate their point regarding the importance of monetary rewards and flexibility with an example drawn from a Swedish media group as follows:

> Multimedia training is available to these journalists. Expectations to participate in the multimedia operation are in journalists' job descriptions, and are sometimes enforced with bonuses (p. 21). [...] When this project started, all the reporters were offered the chance to apply for this job. Nobody was forced to deal with this in order to avoid creating resistance in the newsroom. Then, the chosen reporters went on a training programme, in order to adapt to their new function. Flexibility is considered by Aftonbladet's editors' as one of the main requirements for convergence. Technical problems are seen as one of the biggest obstacles (p. 22).

In addition, Aviles et al. (2008), who investigated the implementation of newsroom convergence in Europe and the USA, insist that changes that influence deeply rooted practices and motivations tend to be "instinctively rejected" (p. 230) at the start, since resistance to change is part of any organisation's culture. They suggest two different models of newsroom convergence, namely, the integrated model and the cross-media model, which have a different production system, newsroom organisation, degree of journalists' multi-skilling and business strategy (p. 221). In particular, they find that the processes of newsroom convergence will encounter obstacles even though they achieve consensus, because "resistance to uncertainty is a built-in mechanism" (p. 230):

> The main resistance came from older and more experienced journalists who were utterly opposed to being turned into multimedia professionals. There were several professionals who rejected the new demands and left the company. They were suspicious about accepting the cross-media structure and they worried about their professional future and how they would fit into the new system (p. 230).

Investigating the multimedia pilot projects of Trinity Mirror in the UK, Williams and Franklin (2007) cited a media management source who admitted that at first there had been some "worker resistance" (p. 57) to the plans, and that some journalists regarded the online project with suspicion. In addition, the journalists expected that the online journalism project would "generate additional work although they refuse to hire more editorial staff" (p. 1). Furthermore, Williams and Franklin (2007) observed that although the management of Trinity Mirror knew they would meet resistance to the move from the journalists, they were still optimistic about implementing the changes.

To understand the meaning of the media convergence experiment, Dupagne and Garrison (2006) conducted in-depth interviews with twelve staff members of the Tampa News Centre. They found that respondents regarded media convergence and its influence upon the newsroom mainly as "a tool to produce either combined or additional newsgathering resources" (p. 237). In addition, Dupagne and Garrison (2006) found that journalists now concentrated more on "multimedia storytelling" (p. 237).

On the other hand, Huang et al. (2006) examined problems concerning media convergence, such as the need to update news staff, changes in production quality, compensation for multiplatform productions and the legitimacy of media convergence (p. 83). Noting the concern of some reporters that, in a converged environment, they would have to process more stories and more information which would add more work on the shoulders of "the reporters who are already overloaded in one platform without appropriately compensating them financially" (Huang et al., 2006, p. 87), Huang et al. concluded that was the reason convergence meets resistance in some companies.

Boczkowski and Ferris (2005) analysed organisational innovation in digital media production at GMS, a European firm that operates print and broadcast outlets in several specialised news markets. They addressed the role of technology in news work and the processes that shape media convergence. They illustrated how adopting online technologies has involved a transfer in the locus of content production in a path of increasing convergence in production processes but continued divergence of media products (p. 32). Regarding the innovations in organisational strategies and structures for digital media production adopted at GMS between 1994 and 2003, Boczkowski and Ferris (2005) found that in this ten-year period, "digital media went from being a secondary function to becoming the primary strategic focus," to being integrated into the other media, and that a number of organisational structures were created at these various stages (p. 37).

Deuze (2004) explored the question of the ways in which "multimedia" impacted upon the practice and self-perception of journalists, and how this process in turn shaped and influenced the emergence of a professional identity of multimedia journalism. He argued that "a 'one way' approach of doing things can never work in today's converging media world" (p. 149).

2.3.3 Resistance and multi-media journalism

Deuze (2005) investigated the ideal-typical values of journalists' ideology in terms of how professional values are challenged or changed in the context of current cultural and technological developments. He argued that "multiculturalism and multimedia are similar and poignant examples of such developments" (p. 442). Noting that most if not all innovations in journalism tend to be encountered by doubts regarding their perceived impact on editorial autonomy, Deuze (2005) argues that "this elevates editorial independence to the status of an ideological value in that it functions to legitimise resistance to (as well as enabling piecemeal adaptation of) change" (p. 449).

Stone and Bierhoff (2002) suggest that in European countries, labour union intervention in innovation processes is often referred to as a "blockage for multimedia ventures" (p. 9). They note that it is the inevitable effects on job profiles of media and newsroom integration which cause heated debates and refusal to accept

experimentation of any kind. In particular, they insist that it is difficult to distinguish between the defence of necessary proper working conditions and fundamental resistance to change. They add that, to break this impasse, a multiparty social discussion relating to media innovation is needed, at both the national and European policy level.

Deuze et al. (2004) addressed an explicit connection in educational approaches and handbooks between scholarly work on online journalists and conceptual publications regarding the change role of professional journalism online. In doing so, they found that most educational programmes did not incorporate an innovative role concerning online journalism, and commonly they tended to concentrate on a rigorously vocational and technological approach in teaching. In addition, Deuze et al. (2004) argued that a "more conceptually rigorous approach towards teaching online or even multimedia journalism" was necessary (p. 19).

2.3.4 Other studies regarding resistance from journalists

Scott (2005) noted that although in the United States, by the mid-1990s strong resistance had built up within the ranks of journalists themselves, represented remarkably by the Committee of Concerned Journalists and the "public journalism" movement, "well-intentioned reform efforts have proven no match for the juggernaut of a news industry racing to the bottom line" (p. 91), even in the open-communication era of the Internet, though technological developments have played a significant role in this conflict.

Deuze (2008) argues that what causes resistance to the proposed innovations in the newsroom is the cultivation of some kind of "nostalgia about the 'good old days' among reporters and editors" (p. 8). In addition, he noted that resistance to an enthusiastic embrace of innovative communication technologies tends to be led by six factors as follows: "a reluctance by management to lead toward adoption; lack of resources to invest in new technology; lack of training; little or no access to the new technology; fear of lost time required to learn; and not enough time in the work schedule" (Garrison 2001, p. 234).

In addition, Deuze (2008) observes that newsroom innovations are always led by the management, noting that "the concentration of media ownership with the deliberate goal to integrate different departments and sections of the industry into cross-media enterprises is and always has been a top-down strategy" (p. 8).

Johnsen (2004) investigated two processes of change in a Belgian regional media group: the introduction of a multimedia desk, and the introduction of video journalism. He found that the changes were not only technological, and that "social forces were active during the process of innovation, and these forces might have consequences for the outcome" (p. 237).

2.3.5 Strategies to overcome journalists' resistance

Without the appropriate strategies and capability for implementation, which the digitalisation project requires, the innovation of organisational structures or work practices can cause serious problems, such as resistance from journalists, and is likely to fail to realise the anticipated outcomes.

In the field of research into newsroom convergence and multimedia journalism, a large body of literature has illustrated the importance of strategies to overcome journalists' resistance to newsroom innovations. For example, Johnsen (2004) examined the resistance of journalists to newsroom innovations, such as the introduction of a multimedia desk and the introduction of video journalism, in three Belgian TV stations. Noting that resistance to the idea of a multimedia desk was strong, he observed several strategies to overcome the resistance, such as strong leadership which utilised the hierarchy and power structure in the organisation, and empowering journalists in relation to the production of news (Johnsen, 2004, p. 249).

Although most studies on newsroom convergence and multimedia journalism deal with both the resistance of journalists and the strategies to overcome it, some of them deal with one or other of these. A small number of studies focus on strategies for successful implementation of innovations irrespective of resistance, or pay attention only to the resistance of journalists to newsroom innovations.

Domingo et al. (2007) suggest that convergence can be structured analytically into four dimensions: integrated production, multi-skilled professionals, multiplatform delivery and active audience. Investigating a sample of 58 Spanish cases, they find the most popular convergence strategy is multiplatform delivery, and "in any given dimension developments tend not to radically change established professional routines and values" (p. 1). They also discover that integration and multi-skilling dimensions seem to be closely connected and chiefly developed in local and regional media with a small staff, whereas in national media organisations both delivery and audience strategies are more complex.

2.4 Cultural changes in newsrooms

2.4.1 Research into cultural change in newsrooms in relation to the introduction of new technologies

New technologies have certain positive and negative influences for the way journalists do their jobs. To date, research into the cultural change that has emerged as a result of introducing new technologies into newsrooms has been mainly focused on the consequences of newsroom convergence (Deuze, 2003; Dupagne and Garrison, 2006; Silcock and Keith, 2006). According to Dupagne and Garrison (2006), journalists in converged newsrooms thought that their work was now more demanding because of additional workload.

> Television reporters, for example, are given the opportunity to write for the newspaper and vice versa. Print and broadcast photographers are asked to shoot images for both platforms. These demanding situations have left some individuals without sufficient time to do everything, some respondents noted (p. 247).

Newsroom convergence not only caused changes in journalists' jobs but also created new relations amongst journalists. In particular, several respondents in the study of Dupagne and Garrison (2006) said that there is "increased collegiality and the willingness to work across platforms in covering both major news stories and routine news on a daily basis" (p. 247).

In addition, Silcock and Keith (2006) investigated how convergence is defined by the journalists involved and sought to identify areas where news operations that adopt convergence encounter challenges based on language and culture. They noted that though language differences do not hinder convergence cooperation, "different broadcast and print newsroom cultures can prove detrimental" (p. 610).

On the other hand, in terms of journalistic cultures involving new media technologies, Deuze (2003, pp. 217-219) introduces four types of journalism functions generically: orientating, instrumental, monitorial and dialogical. Deuze (2003) argued that "the application of particular online characteristics not only has consequences for the type of journalism produced on the web, but that these characteristics and online journalisms indeed connect to broader and more profound changes and redefinitions of professional journalism and its (news) culture as a whole" (p. 203). In particular, Deuze (2003) noted that mainstream media is likely to work in a comparatively closed journalistic culture "such as AOL Time Warner in the US, or Kirchmedia, Vivendi and Sanoma in Europe" (p. 209).

2.4.2 Research into cultural similarities or differences in newsrooms across different national contexts

With regard to the newsroom culture in cross-national context, researchers mainly focused on European journalism, journalists' understanding of the term 'objectivity,' and online trust in the context of different cultures (Örnebring, 2009; Donsbach and Klett, 1993; Park and Wiedenbeck, 2005).

First of all, Örnebring (2009) paid attention to European journalism. In his study on the current state of comparative European journalism, Örnebring (2009) noted that in the 2000s, European journalism became a growing subject of interest, being influenced by "a parallel increase in interest in comparative studies of journalism in general" (p. 1). He found that a comparative analysis of journalism in Europe was important because it "could contribute to both a better understanding of how processes of homogenisation and of differentiation interact in different nations, as well as within the same geopolitical region" (p. 13).

On the other hand, Donsbach and Klett (1993) focused on how journalists define a key term of their profession, "subjectivity/objectivity," through a mail survey of journalists in each of four countries; Germany, Great Britain, Italy, and the United States. They found that "journalists in the four countries differ in their understanding of the term objectivity" (p. 78) and that "the U.S. and British prefer a more retained notion, stressing the news media's function to act as a common carrier between interest groups and the public" (p. 78). A journalist's notion of objectivity in Germany and, to a lesser extent, in Italy, is greatly influenced by "his or her age and the political position on the left–right-scale" (Donsbach and Klett, 1993, p. 78). Consequently, "the younger a journalist and the more left leaning, the more likely is it that he or she will emphasise a notion of objectivity as going beyond the statements and dig out the hard facts of a political dispute" (ibid.).

Apart from the above studies, Park and Wiedenbeck (2005) carried out a study on designing research into online trust in the context of different cultures. In their study, which was designed to measure cultural attributes and factors regarding online trust in the United States, Korea, and Japan, Park and Wiedenbeck (2005) proposed a definition for culture and online trust and addressed the emergent and dynamic nature of culture and trust in the online setting. They argued that their "model of cross-cultural online trust provided a theoretical background for measuring online trust and cultural impacts" (pp. 21-22).

However, as far as newsroom digitalisation is concerned, few researches into cultural problem are conducted. As stated above, studies on newsroom culture in a newsroom (Deuze, 2003; Dupagne and Garrison, 2006; Silcock and Keith, 2006) focused on not newsroom digitalisation but newsroom convergence or online journalism. In the same way as shown above, cross-national studies on newsroom culture did not pay attention to the newsroom digitalisation. From this, the researcher found that the cultural studies on newsroom digitalisation should be recommended because a digitalised newsroom forms the technological basis of media convergence, multimedia journalism and multi-skilling.

2.4.3 Weaver's "The Global Journalist"

Empirical cross-national studies are quite difficult because they usually need two or more research sponsors in different countries to jointly approve and fund the work. However, cross-national studies are more important than ever in this era of increasing globalisation. In particular, as media organisations have been globalised, "journalistic and press performance issues," as Reese (2001) observed, "have attracted a correspondingly global community of scholars to conduct often transnational, comparative studies" (p. 173). To begin with, Weaver (1998) describes "news people around the world," as indicated in the title of his book, *The Global Journalist.*

However, Fürsich (2002) argues that "global journalists" are neither journalists in Weaver's sense nor "international journalists who cover foreign news from the perspective of one nation" (p. 59). Instead, he defines them as "media workers who supply content to transnational media corporations and produce their content for a global market" (p. 59). Nevertheless, this study follows the definition of the global journalist by Weaver because his book will be discussed in this section.

The crucial assumption underlying Weaver's (1998) study is that "journalists' backgrounds and ideas have some relationship to what is reported (and how it is covered) in the various news media around the world, in spite of various societal and organisational constraints, and that this news coverage matters in terms of world public opinion and policies" (p. 2). The study reports evidence from surveys of a total of 20,280 journalists from 21 countries, with remarkable methodological variation including mail surveys, telephone or personal interviews, and different methods of data collection combined.

Weaver (1998) mainly focused on several points including the introduction of new technologies; the watchdog role; professional roles; journalists in the international context such as Korean journalists.

First of all, with respect to the introduction of new technologies in the newsrooms, British, Australian and Finnish journalists had generally positive views. Henningham and Delano noted that in the UK. "there has been wide spread acceptance of

technological change in the newsroom" (1998, p. 158). The researchers' survey found that almost three-quarters (72%) of journalists thought that the quality of their work had been improved by the new technology, and more than two-thirds (68%) thought that it saved time. In addition, Henningham (1998) noted that Australian journalists also had "generally positive views of the introduction of new technologies in newsroom" (p. 98) and more than four-fifths thought that "time savings and quality improvements had resulted" (p. 98). With respect to the reaction of the Finnish journalists, Heinonen (1998) observed that: "The overwhelming majority of Finnish journalists take a positive view on the new editorial technology" (p. 172). He noted that in 1987, more than two-thirds (68%) thought its influence positive, and the proportion of positive evaluations in 1993 increased to 72%.

Regarding the watchdog role, Weaver pointed out that what Chinese "journalists in a survey say is sometimes inconsistent with what they do in daily practice, so it is important to distinguish between the two" (p. 479). In addition, Weaver discovered that there were substantial national differences in the journalists' ethics of reporting. In particular, journalists vehemently disagreed on whether some ethically dubious reporting practices might be acceptable in the case of an essential news story, with the only exception being the non-disclosure of news sources that have been promised confidentiality. They differed widely on whether it might be acceptable to pay for information, to pose as someone else, to badger or harass news sources, to use documents without permission, and to gain employment with a firm to gain inside information. Regarding these differences in the ethics of reporting, Weaver noted that they "probably have more to do with the cultural norms of each country than with region of the world or differing political systems" (p. 479).

In terms of professional roles, Weaver found a remarkable consensus among journalists regarding the importance of reporting the news quickly and providing access for members of the public to express themselves. Weaver also reported much disagreement on the importance of providing entertainment, reporting accurately and objectively, providing analysis of complex issues and problems, and being a watchdog on government.

On the other hand, regarding the Korean journalists in the international context, Weaver (1998) found that their job satisfaction was below average (17%) because of "supervisor's comments, pay, and job security" (p. 461). In terms of the size of workforce, Weaver noted that it was "surprising that Korea has so many more journalists than Taiwan, Britain or Canada" (p. 460). With respect to education, the highest proportions of journalists who were college graduates were found in Korea, Spain, and the United States, with proportions nearly as high in Chile and Ecuador (p. 459).

In particular, in terms of journalistic practices, Auh et al. (1998) note that a well-known and constant charge against Korean journalists "concerns the widespread tradition of *chonji* (literally, a small consideration) – financial gratitude (usually in small white envelopes) offered in exchange for special consideration" (p. 65) such as "playing up or down a news story" (p. 62). Auh et al. noted that although "more than half denied accepting *chonji* themselves" (1998, p. 65), more than three out of four Korean journalists confirmed the continuation of this corrupt practice.

> In most cases, the survey indicates, *chonji* is given directly to reporters by persons or organisations outside the media (81%). At other times, *chonji* is transmitted through the press corps covering government agencies (15%). Surprisingly, *chonji* is said to be passed for the most part simply because of custom (57%), rather than in exchange for favourable coverage (29%), or to play down or suppress embarrassing facts (10%) (Auh et al, 1998, p. 65).

2.4.4 Korean journalism culture

(a) *Chonji*

Lee Sun-myung, the head of the NDS project team, tried to change the unprofessional practices of Korean journalism, such as the corrupt behaviour of some privileged editors. Kim (2003) argues that desk news executives or editors "offered most definitive suggestions for news content as well as reporters having had their writings revised by the desk executives without their consent" (p. 24). Editors show the most typical features of corrupt journalism in Korea.

Kim (2003) notes that among these bad practices, "*chonji* may be the most problematic aspect of Korean journalists' professionalism" (p. 26). He cites a survey of the Korean Press Foundation (2001) in which 62.5% of respondents agreed that *chonji* is routinised in journalism. *Chonji* in Korean, literally meaning "a small consideration", which is delivered by various sources from government agencies, politicians, and private companies to PR agencies is largely divided into three forms; cash, presents and banquets. In the case of cash *chonji*, the envelope containing cash ranging between £50 and £250 or more, depending on the importance of the news item involved, changes hands from news sources to reporters.

The website Press Reference. com (online) introduces the bad behaviour of Korean journalism, such as the practices of *chonji* and junkets, as follows:

> An American journalist, David E. Halvorsen, had a culture shock over *chonji* in Korea during his brief visit there under a Fulbright grant in the early 1990s. After learning *chonji* practices, he asked a Korean colleague about this blatant violation of press ethics. The Korean colleague explained that *chonji* is but an expression of the "good old Korean custom of exchanging gifts between friends." He rhetorically retorted by asking, "If it is such a virtue, why do you not publicise it in your paper?" [...] The *Media Today*, a weekly journalism review, frequently exposes press corps members of certain news beats taking junkets while accompanying high-ranking officials' overseas trips. The most notorious of this practice was the 1999 junket to Mt. Kumgang-san Resort, a scenic spot in North Korea developed by the gigantic Hyundai Group. Many publishers and CEOs of media institutions, together with their spouses, took free trips to the resort under Hyundai's promotional sponsorships. A Hyundai official once revealed that as many as 1,500 journalists might have taken such trips free (from the Press Reference.com website, published in 2009).

(b) Entertainment

Kim (2006) raises another argument for why Korean journalistic practices should be reformed. In her research on Korean female journalists, Kim (2006) illustrates how Korean journalists, in particular male journalists, are corrupt.

> Most journalists say that it is difficult to reject the bribes that are distributed to the entire press corps. They are afraid of being alienated from the press, if they choose to go their own way. More important than rejection by their colleagues is the news source's opinions

about those journalists who reject bribes: What is strange in bribes is that a feeling of oneness takes place in the relationship after a hidden deal was done. Therefore, the bribes make it possible to trade in so-called 'hard-core news' with each other, between the news source and the journalist. This feeling of 'sharing' the unethical behaviour between the journalist and the news source is very problematic, since it can become a mechanism that excludes those journalists who refuse to participate in this unethical behaviour (Kim, 2006, p. 129).

(c) The press corps of the news beats

Korean journalists have, as Sutton (2006) observes, an exclusive *gijadan* (press club system or press corps) that "denies news sources to non-member journalists" (p. 9). Regarding this point, Jang (2006) points out that the coverage system constituted by the beat systems (i.e. a closed access system) and press corps has built up an exclusive news coverage system, and subsequently "only the state approved reporters could gather news from the allotted news sources" (p. 12). Jang (2006) illustrates the problems and opposite functions of the beat system and press corps system as follows:

a. The newsgathering and reporting through the beat system and press corps system was apt to lead to biased information. The phenomenon of the so-called "announcing journalism" that showed uniform and indistinctive news articles on most of the papers could be attributed to dependence on the beat and press corps systems.
b. The possibility of corruption, represented by bribes, can be prevalent among these systems. Receiving bribes decisively restricts the right to free access to information of people by weakening the function of independent thought and action of the press, which limits the free and open circulation of information.
c. These systems can wholly block the public's right to know that can be satisfied only through fair competition. Limited information is offered to readers by the beat system, with news being necessarily censored and controlled, and therefore could not be viewed by the public (Jang, 2006, p. 12).

(d) Seniority System

One more Korean newsroom practice that Lee, head of the NDS project team, wanted to reform was what Kim (2003) called "the peculiar tradition of the hierarchical practices" (p. 23). These hierarchical norms and practices, rooted in Korea's traditional Confucian culture, as Kim (2003) observed, "discouraged positive

changes" (p. 23) in Korean newsrooms. Lee thought that every opportunity should be provided based not on the seniority system or favouritism, but on journalists' professional capacity (IT1, interviewed on 26 July 2007). Although newsroom hierarchies are, as Deuze (2008) observed, usually decided "based on seniority and status" (p. 15), under this Korean seniority practice, which continued to control the staffing and management of a newsroom, only "time served or pecking order of having entered a news organisation" (Kim, 2003, p. 23) decided the hierarchy in a newsroom. Consequently, journalists are never motivated to improve their work in this circumstance.

2.5 Diffusion of innovations: A discussion of the relevance of Rogers' work

This study focuses on the process of newsroom digitalisation and factors influencing the adoption of news digitalisation, and it accordingly can be categorised as one of what Singer (2004) calls "newsroom diffusion studies" (p. 5). Considering the goals and characteristics of this study, Rogers' innovation diffusion theory (2003) is the most appropriate theory for investigating the process of innovation implementation and attributes influencing the adoption of the innovation. Rogers is widely acknowledged as one of the pioneers who have contributed to innovation diffusion research and its current theories. His research on the diffusion of innovations has provided a rich framework for understanding the factors and processes involved in the adoption of innovations in a wide range of areas. The theory of "Diffusion of Innovation" explains how innovations in society and organisations are spreading (Rogers, 2003).

The "Diffusion Theory" has already become the basis for most studies on innovation diffusion on how new ideas, techniques and work procedures can penetrate the newsrooms (e.g. Singer, 1998, 2004; Maier 2000; Meier 2007; Hermida, 2009; Tomasello, 2009). Singer (1998) proposed four approaches, including diffusion of innovation theory, to address how journalists' roles and jobs are changing. She noted that theory of diffusion of innovation is "a natural for this field of study" because it "deals specifically with the spread of change through a social system."

Several years later, using Rogers' (2003) diffusion of innovations theory, Singer (2004) examined the aspects of newsroom convergence as journalists struggled to adapt to a new environment that changed their work practice and their fundamental ideas of what they do and why. In this study, she found that although there were "culture clashes and other issues of compatibility, journalists see clear advantages in the new policy of convergence" (p. 3).

In addition, Maier (2000) used Rogers' (1995) innovation diffusion theory to investigate the extent to which computer-assisted reporting techniques are used in the newsroom, to discover sources of resistance to new technology, and to estimate potential strategies to overcome those obstacles in the newsroom. He found that "all of the most promising strategies involved making the computer an easy, everyday newsroom tool."

Meier (2007) examined modern newsroom practices in Austria, Germany and Switzerland through the framework of the diffusion of innovations theory. In particular, he focused on the manner of innovation, the timely aspect of the process of diffusion, the channels of communication, and the structure of the social systems involved. Meier (2007) noted that "The 'Diffusion Theory' already has become the basis for some US studies on how new ideas, techniques and work procedures can penetrate the newsrooms (e.g. Garrison, 2001; Singer, 2004)" (p. 8).

Hermida (2009) examined how BBC News had incorporated blogging in its journalism, investigating the internal discussions that influenced the adoption of blogs and tracing how they were transformed into a central part of the BBC's news production. Using a case-study approach and Rogers' (1995) diffusion of innovation theory, Hermida (2009) also explored "the impact of blogging on BBC editorial values and considers how journalists have sought to maintain their authority in a digital media environment by integrating a new form of journalism within existing norms and practices" (p. 2).

Tomasello et al. (2009) examined a 17-year timeframe to assess publication patterns in and outlets for new media research that investigated the Internet and related digital technologies within the communication discipline. Using Rogers' (2003) diffusion of

innovations theory and Fidler's (1997) principles of "mediamorphosis," they concluded that new media research which concentrated on the Internet and related digital technologies has currently "established itself as a sustainable area of study within the discipline" (p. 13).

Rogers (2003, p. 36) defined 'diffusion' as "the process by which an innovation is communicated through certain channels over time among members of a social system." The four elements that make up the process of diffusion are: (a) the innovation, (b) communication channels, (c) time, and (d) the social system (Rogers, 2003, pp. 11-31). These will be dealt with in sequence.

2.5.1 Innovation

As defined earlier, an innovation is a new idea, object or practice that is subjectively interpreted by an individual with the possibility of adoption. Even in the case of long time lags after discovery or first use, if an idea seems new to an individual, that makes it an innovation to him or her. Technologies usually have two components; software components that are symbolic and hardware components that represent the material form of an idea (Rogers, 2003, p. 13). Newsroom digitalisation is a software form of innovation.

Significant here are the perceived characteristics of the innovation, such as its relative advantage over whatever it is intended to supersede; its compatibility or consistency with the values, experiences and needs of potential adopters; its perceived complexity; its trialability, or the degree to which it may be tested on a limited basis; and its observability, or the extent to which its results are visible to others in the social system. Of these, only complexity is a negative influence on the likely rate of adoption (Rogers, 2003).

Perceived attributes of innovation

Regarding "perceived attributes of innovation," Rogers (2003) defines five properties that a successful innovation technology has to possess, as follows (pp. 229-259):

(1) Relative Advantage

This refers to the extent, to which an innovation has superiority over an older idea, and may be measured in terms of the resultant economic profit. Although newsroom digitalisation does not replace traditional newsgathering methods, newsroom digitalisation will help journalists accomplish these tasks much faster, more efficiently, and more accurately. One way that relative advantage manifests itself is through heavy promotional efforts (Rogers, 2003).

(2) Compatibility

Compatibility refers to the extent that an innovation is in line with pre-existing values and previous experiences of the adopters. The higher the compatibility, the higher is the likelihood of adoption. This gives the potential adopters some form of security and makes the innovation more meaningful to them. This means that low compatibility rates may in fact hinder the adoption of innovations (Rogers, 2003).

(3) Complexity

Complexity refers to the degree of difficulty related to the understanding and use of an innovation. Innovations can be ranked on a complexity–simplicity scale with those easier to understand on the simplicity end. The general suggestion has it that complexity affects the rate of adoption (Rogers, 2003).

(4) Trialability

Trialability refers to the extent to which an innovation can be tried on a limited basis. Potential adopters are more comfortable with those innovations that they can try on a limited basis and where they can make judgments based on initial results (Rogers, 2003). While early adopters do not have any past references, laggards can refer to the successes of early adopters before adoption.

(5) Observability

Observability refers to the extent that the results of an innovation are observable to others. Results that are obvious and those that are easy to communicate diffuse much more quickly than those that are not. The more observable the results are, the more the chances are that laggards will adopt the innovation (Rogers, 2003).

2.5.2 The communication channel

The communication channel is the means by which the message gets from one individual to another. Interpersonal channels are seen as especially effective in persuading an individual to accept a new idea if the channel links people who are similar in important ways. Most people depend on subjective evaluations by others like themselves who have adopted an innovation or not (Rogers, 2003). On the other hand, "mass media channels" are the means of spreading messages that incorporate a mass medium, such as radio, television and newspapers. Interpersonal channels, which include a face-to-face exchange between two or more individuals, are more effective in persuading an individual to accept a new idea. By contrast, mass media channels are generally the speediest and most effective way of informing an audience of potential adopters about the existence of an innovation. Currently, interactive communication via the Internet has become most important for the diffusion of innovations (Rogers, 2003, p. 18).

2.5.3 Time

Time refers to the timeline for the adoption from when an individual hears about an innovation to the time that he or she adopts it. This element affects the diffusion process in several ways. One involves the amount of time between an individual's first awareness of an innovation and his or her confirmation of the decision to adopt. Time also is a measure of the speed with which the innovation is adopted. Finally, the point in time at which a given individual adopts an innovation relative to its adoption by others in the social system is important (Rogers, 2003, p. 20). Longitudinal data were not available for this study, and its focus is on individual journalists, so this last aspect of time is most relevant here.

As Rogers (2003, p. 22) observed, many decisions on innovation are made by organisations, communities, or other types of adopting units, rather than by individuals. A decision made by an official in authority means that individual journalists have little or no say in adoption of the innovation. Furthermore, when a decision on innovation is made by a system, rather than by an individual, the decision process is more complicated because a number of individuals are involved.

Before going into the details of the innovation-decision process of individuals in adopting a new technology, the innovation process in organisations should be examined. Rogers points out two main stages of the organisational innovation process – *initiation* and *implementation*. Initiation is divided into *agenda-setting* and *matching*.

Agenda-setting is a process in which a specific problem is identified and a need to solve it is raised. Matching is the process in which a specific innovation is matched to solve the problem from the previous step. On the other hand, implementation is divided into three stages: *redefining*, *clarifying*, and *routinising*. Redefining deals with initial implementation of the innovation and redefining it to fit the specific organisation. Clarifying is a process where the innovation is widely used and becomes clear to more and more members of the organisation. Finally, routinising occurs when the innovation stops being considered as such – that is, it loses its identity as a new technology and becomes a part of the everyday routine of the organisation. Rogers (2003. p. 421) illustrates the innovation process in organisations as shown in Figure 2.1.

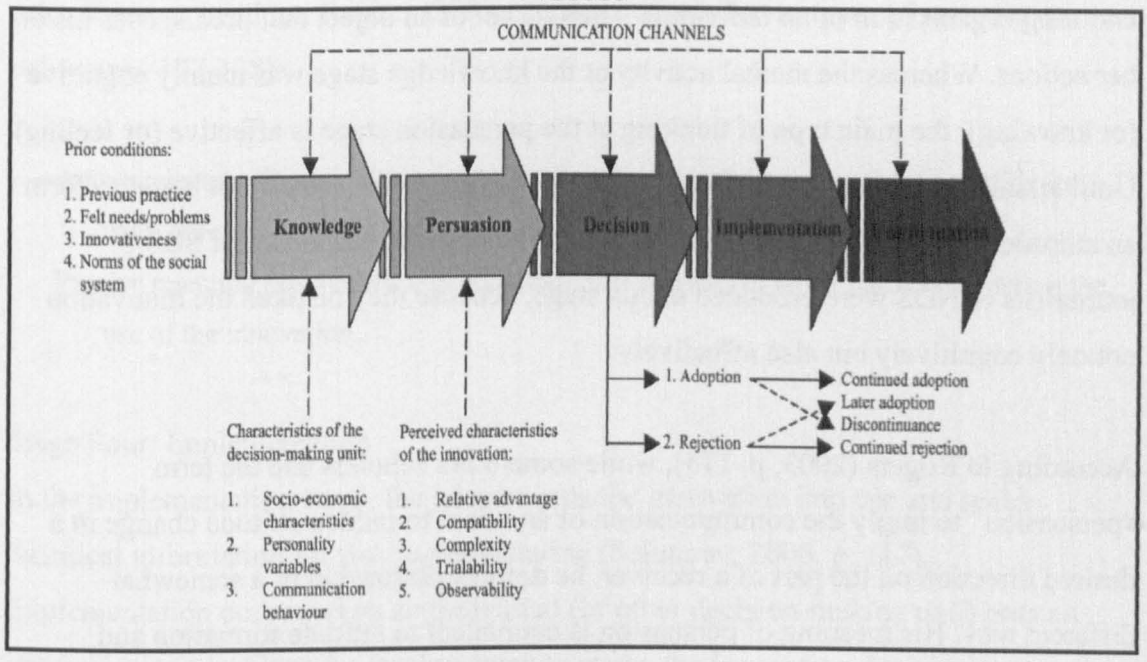
Figure 2.1 Five Stages in the Innovation Process in an Organisation

		Decision		
I. Initiation			II. Implementation	
#1 Agenda-Setting	#2 Matching	#3 Redefining/ Restructuring	#4 Clairfying	#5 Routinizing
General organizational problems that may create a perceived need for innovation.	Fitting a problem from the organization's agenda with an innovation.	The innovation is modified and reinvented to fit the organization, and organizational structures are altered.	The relationship between the organization and the innovation is defined more clearly.	The innovation becomes and ongoing in the organization's activities, and loses its identity.

Rogers notes that the decision to adopt or not to adopt an innovation is not an instantaneous act, but one that involves a process. The decision is also an active information-seeking and information-processing behaviour. Rogers' model identifies five sequential stages that occur in the process of adoption of innovations such as new communication technologies (2003). They are (a) knowledge about, or exposure, to the innovation; (b) formation of favourable or unfavourable attitudes toward the new idea, or persuasion; (c) a decision to adopt or reject the innovation;

(d) implementation of the decision; (e) and confirmation or reinforcement. This study uses this model to investigate the process of the newsroom digitalisation of the SBS TV newsroom. Rogers (2003, p. 170) depicts the innovation-decision process as shown in Figure 2.2.

Figure 2.2 A Model of Five Stages in the Individual Innovation-Decision Process



Stage One: Knowledge

The individual innovation-decision process begins with the knowledge stage, which starts when an individual is exposed to an innovation's existence and gains some understanding of how it functions (Rogers, 2003, p. 171). This exposure may have happened by chance, or may have been the result of an effort to seek out the innovation once the individual has identified a need for it (Seligman, 2006, p. 116). At this point, although the individual is exposed to the innovation, he or she neither has adequate information about it, nor possesses the motivation to gather more.

Knowledge of an innovation is gained by extracting cues from stimuli. The stimuli that the individual encounters are partially a result of the individual's enacted environment. The individual may manage his social contacts and other elements of his environment in such a way as to gain knowledge about a particular innovation or about ways to meet a particular need (Seligman, 2006, p. 116). People are likely to

expose themselves to ideas that are "in accordance with their interests, needs and existing attitudes" (Rogers, 2003, p. 171).

Stage Two: Persuasion

At the persuasion stage in the innovation-decision process, the individual forms a favourable or unfavourable attitude towards the innovation. Attitude is a relatively enduring organisation of an individual's beliefs about an object that predisposes his or her actions. Whereas the mental activity at the knowledge stage was mainly cognitive (or knowing), the main type of thinking at the persuasion stage is affective (or feeling). Until an individual knows about a new idea, of course, he or she cannot begin to form an attitude towards it (Rogers, 2003, p. 175). The negative responses of SBS's journalists to NDS were produced at this stage, because they disliked the innovation not only cognitively but also affectively.

According to Rogers (2003, p. 175), while some other scholars use the term "persuasion" to imply the communication of an intent to induce attitude change in a desired direction on the part of a receiver, he defines persuasion in a somewhat different way. His meaning of persuasion is equivalent to attitude formation and change on the part of an individual, but not necessarily in the direction intended by some particular source, such as a change agent (Rogers, 2003, p. 175). In this context, SBS journalists formed their attitudes independently and resisted the urging of the project team to adopt NDS as quickly as possible. The process of exchanging opinions among peers led the SBS journalists to form negative responses to the project.

Thus, selective perception is important in determining the individual's behaviour at the persuasion stage, for it is at the persuasion stage that a general perception of the innovation is developed. Such perceived attributes of an innovation as its relative advantage, compatibility and complexity are especially important at this stage (Rogers, 2003, p. 175).

Stage Three: Decision

At the decision stage, the individual "engages in activities that lead to a choice to adopt or reject an innovation" (Rogers, 2003, p. 177). Adoption is a decision to make

full use of an innovation as the best course of action available, whereas rejection is a decision not to adopt an innovation (Rogers, 2003, p. 177).

The innovation-decision process can just as logically lead to a decision to reject as to adopt. In fact, each stage in the innovation-decision process is "a potential rejection point" (Rogers, 2003, p. 177). Noting that rejection can occur even after a prior decision to adopt, Rogers (2003) suggests two different types of rejection as below (pp. 177-178):

> Active rejection: this consists of considering adoption of the innovation (including its trial) but then deciding not to adopt it.
>
> Passive rejection (also called non adoption): this consists of never really considering the use of the innovation.

Stage Four: Implementation

In the implementation stage, the adopter puts the innovation into use and seeks technical information for the implementation (Seligman, 2006, p. 117). Implementation occurs when an individual (or other decision-making unit) puts an innovation to use. Until the implementation stage, the innovation-decision process has been a strictly mental exercise of thinking and deciding. Nevertheless, implementation involves overt behaviour change as the new idea is actually put into practice. It is one thing for an individual to decide to adopt a new idea, but quite a different thing to put the innovation to use. Implementation usually follows the decision stage rather directly (Rogers, 2003, p. 179).

Problems of implementation are usually more serious when the adopter is an organisation rather than an individual. In an organisational setting, a number of individuals are usually involved in the innovation-decision process and the implementers are often a different set of people from the decision makers. In addition, the organisational structure that gives stability and continuity to an organisation may resist the implementation of an innovation (Rogers, 2003, p. 179). Rogers (2003) defines "reinvention" as the degree to which an innovation is changed or modified by a user in the process of its adoption and implementation (p. 180).

Stage Five: Confirmation

At the confirmation stage the individual seeks reinforcement of the decision to adopt or reject that he or she has already made, and may reverse this decision if exposed to conflicting messages about the innovation. At the confirmation stage, the individual seeks to avoid a state of dissonance or to reduce it if it occurs (Rogers, 2003, p. 189).

Human behavioural change is often motivated in part by a state of internal disequilibrium or dissonance, an uncomfortable state of mind that an individual seeks to reduce or eliminate. In the case of innovative behaviour, this reduction of dissonance may occur after the decision to implement an innovation, when the individual secures further information that persuades him or her that he or she should not have adopted. This type of dissonance may be reduced by discontinuing adoption of the innovation. On the other hand, discontinuance or later adoption occurs during the confirmation function in the innovation-decision process (Rogers, 2003, pp. 189-190).

Discontinuance is a decision to reject an innovation after having previously adopted it (Rogers, 2003, p. 190). Two types of discontinuance are: (1) replacement and (2) disenchantment. Replacement discontinuance is a decision to reject an idea in order to adopt a better idea that supersedes it. Constant waves of innovations may occur in which each new idea replaces an existing practice that was an innovation in its day (Rogers, 2003, p. 190).

The interrelationship of the two models

The connectedness of the innovation process in an organisation and the individual innovation decision process is critical to this kind of study, since the interpretation of both "the integrated micro (individual) level and macro (organisational) level data" will be explicated through the framework of the organisational model (Speicher, 1997, p. 43). Hence, it is very important to understand the correlation and demarcations between the two processes, since the organisational model sets the individual decision process as a premise. Accordingly, this review explains each organisational stage, and presents a description of the matching individual stage as follows:

(1) Agenda-setting stage (macro level) and knowledge stage (micro level)
Agenda-setting occurs in the innovation process when a general organisational problem that may create a perceived need for an innovation is defined. This stage is similar to the knowledge stage in the individual innovation-decision process. The knowledge stage occurs when an individual (or other unit) is exposed to an innovation's existence and gains some understanding of how it functions.

(2) Matching stage (macro level) and persuasion stage (micro level)
As shown earlier (see Section 2.5.3), matching is the process in which a specific innovation is matched to solve the problem from the previous step. This stage is similar to the combination of the persuasion and decision stages (Speicher, 1997, p. 51). At the persuasion stage, the individual becomes more psychologically involved with the innovations, actively seeking information about the new idea. On the other hand, the decision stage occurs when an individual engages in activities that lead to a choice to adopt or reject an innovation.

(3) Redefining/restructuring (macro level) and implementation stage (micro level)
At the redefining/restructuring stage, the innovation imported from outside the organisation gradually begins to lose its foreign character. This occurs when the innovation is reinvented to accommodate the organisations' needs and structure more closely, and when the organisation's structure is modified to fit with the innovation. The organisational redefining/restructuring stage is very similar to the individual implementation stage. For an individual, a certain degree of uncertainty about the expected consequences of the innovation still exists at the innovation stage. However, the anxiety about implementation is tempered by the process of reinvention.

(4) Clarifying stage (macro level) and confirmation stage (micro level)
Clarifying occurs as the innovation is put into more widespread use in an organisation. The meaning of the new idea gradually becomes clearer to the organisation's members. The organisational clarifying stage and the individual confirmation stage are actually quite different (Speicher, 1997, p. 61). Although the two stages are both grounded in a social construction of understanding about the innovation, the purpose for the understanding differs dramatically.

In the clarifying stage, the mutual understanding allows users to comprehend the intent of the innovation and reduce uncertainty about its role in the organisation. In contrast, individual confirmation is a process of seeking reinforcement of the innovation-decision already made or of reversing previous decision to adopt or reject the innovation if exposed to conflicting messages.

(5) Routinising stage (macro level)

When the innovation stops being considered as such it loses its identity as a new technology and becomes a part of the everyday routine of the organisation. The organisational routinising stage has no equivalent individual stage.

Based on Speicher's view (1997, pp. 44-66), the relationship of the two processes is illustrated in tandem in Table 2.2.

Table 2.2 Similarities between the organisational diffusion model and the individual innovation-decision process

Organisational level	Individual level	Remarks
Agenda-setting	Knowledge	Similar to each other
Matching	Persuasion	Similar to each other
	Decision	Similar to each other
Redefinition/ Restructuring	Implementation	Similar to each other
Clarifying	Confirmation	Similar to each other, but in terms of the purpose, two stages differ dramatically*
Routinising	n/a	n/a

*Although the two stages are both grounded in a social construction of understanding about the innovation, clarifying is designed to enhance understanding of the organisational innovation, while confirmation is created to provide a justification for the individual decision to adopt and implement an innovation (Speicher, 1997, pp. 61-62).

2.5.4 The social system

Diffusion theory also takes into account the social system where the innovation is being implemented, in this case the SBS newsroom. Rogers (2003) defines a social system as "a set of interrelated units that are engaged in joint problem solving to accomplish a common goal" (p. 37). A social system, in which the diffusion occurs, affects the diffusion of an innovation in terms of (1) its social structure, (2) norms, (3) opinion leaders, change agents, (4) types of innovation-decision, and (5) consequences (Rogers, 2003, p. 23-31). Singer (2004) summarises the social system,

"which constitutes a boundary within which an innovation diffuses" (Rogers, 2003, p. 24), more specifically as follows:

> Norms within a social system define a range of tolerable behaviour and serve as a standard or guide for members. Informal opinion leaders, individuals who conform closely to system norms, act as attitudinal or behavioural models for others. Decisions about whether to adopt an innovation can be made by an individual acting independently, by a collective of individuals seeking consensus or by an authority figure mandating adoption within the system as a whole (Rogers, 2003, p. 5).

2.5.5 Summary of the four main elements in the diffusion of innovation

In order to investigate what the process was by which SBS introduced the digital TV news production system into the SBS newsroom in terms of the organisation, two models of the innovation diffusion theory were used. These two models are innovation process in organisations and innovation decision process by individual, both of which belong to the time element of the four elements of Rogers' diffusion theory: innovation, communication channels, time and social system.

At first, the innovation process in organisations consists of four stages; agenda-setting, matching, redefinition/restructuring, clarifying, and routinising. On the other hand, the innovation-decision process by individuals has also five stages: knowledge, persuasion, decision, implementation, and confirmation. These models are used in tandem as shown above (see Table 2.2).

In order to investigate what the process was by which SBS introduced the digital TV news production system into the SBS newsroom in terms of the journalist, the study used "innovation" element of Rogers' four elements, which has five attributes: ; relative advantage, compatibility, complexity, observability and trialability. In addition, the mass media channel and the interpersonal channel, which belong to the element of communication channels, are employed as well.
Finally, so as to identify what specific changes, if any, occurred in the SBS newsroom after adoption of the digital TV news production system, Rogers' model on the consequences of innovation was used. This model, which belongs to the element of

"social system," consists of desirable vs. undesirable, direct vs. indirect, and anticipated vs. unanticipated. Table 2.3 summarises the four main elements in the diffusion of innovation discussed above (Rogers, 2003, pp. 11-31).

Table 2.3 Summary of four main elements in the diffusion of innovations

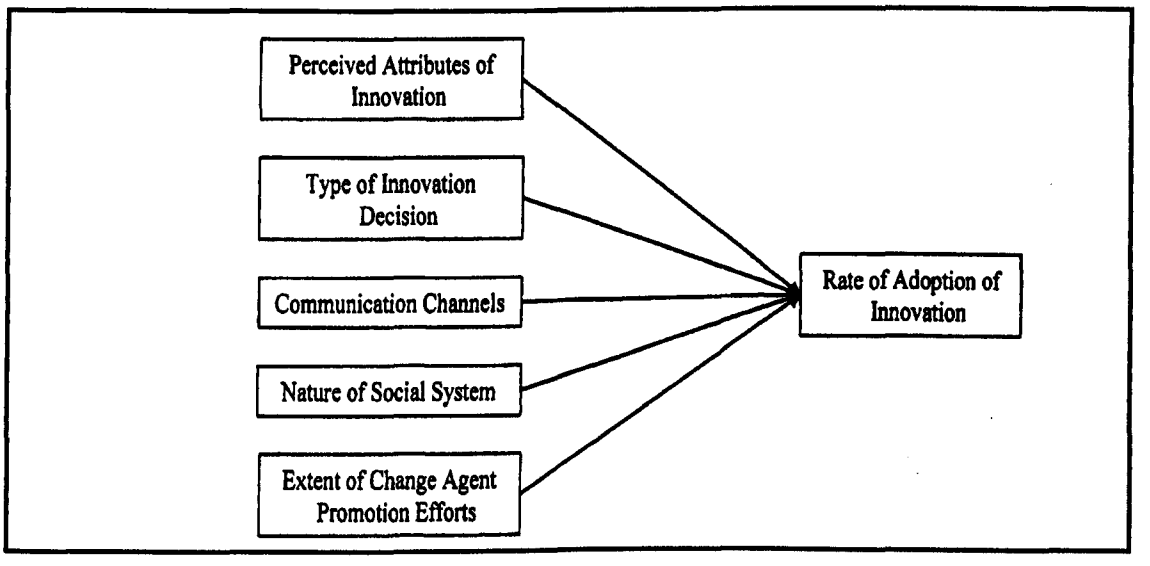
Elements	Conceptions	
Innovation	Five attributes of innovation	Relative advantage
		Compatibility
		Complexity
		Observability
		Trialability
Communication Channels	Mass media channel and Interpersonal channel	
Time	Innovation Process in Organisations	Agenda-Setting
		Matching
		Redefining/Restructuring
		Clarifying
		Routinising
	Innovation-Decision Process by Individuals	Knowledge
		Persuasion
		Decision
		Implementation
		Confirmation
	Innovativeness and adopter categories	Innovators
		Early adopters
		Early majority
		Later majority
		Laggards
The social system	Social structure and diffusion	
	System norms and diffusion	
	Opinion leaders / Change agents / Aides	
	Types of innovation decisions	Optional/ Collective/ Authority
	Consequences of innovations	Desirable vs. undesirable
		Direct vs. indirect
		Anticipated vs. unanticipated

2.6 Attributes and factors affecting innovation diffusion

To analyse the attributes and factors affecting diffusion of the digital news production system in SBS, this research mainly employs attributes Rogers (2003) established on innovation diffusion framework which consisted of an innovation, communication channels for disseminating information about the innovation, a social system of potential adopters and the diffusion process that occurred over time (see Section 2.5).

Rate of adoption is the relative speed with which members of a social system adopt an innovation (Rogers, 2003). It is generally accepted that innovations will be adopted more readily if the decision to adopt is taken on a personal, as opposed to an organisational, level. However, there are many other extraneous variables involved in determining the rate of adoption of innovations. Rogers (2003) suggested five variables determining the rate of adoption of innovation. These are depicted in Figure 2.3.

Figure 2.3 Variables Determining the Rate of Adoption of Innovation



Source: Rogers (2003, p. 222)

(1) Perceived attributes of innovation

According to Rogers (2003, p. 221), perceived attributes of innovation are significant because they explain 49–87% of the variance in the rate of adoption. As discussed in section 2.3, the five perceived attributes of innovation are; relative advantage, compatibility, complexity, trialability and observability.

(2) Type of Innovation Decision

Generally, individuals make the decision to adopt innovations more rapidly than organisations. Furthermore, the more people who participate in decision-making, the slower is the rate of adoption (Rogers, 2003, pp. 221).

(3) Communications Channels

The communications channels for the diffusion of innovation can also influence the rate of adoption. For example, when late adopters obtain knowledge of a certain innovation through interpersonal channels, their rate of adoption becomes slower (Rogers, 2003, p. 222).

(4) Nature of Social System

The social system in which the diffusion occurs affects the diffusion of an innovation in terms of its social structure, norms, opinion leaders, and change agents. Rogers (2003) observes that: "The degree to which the communication network structure" of a social system "is highly interconnected, also affects an innovation's rate of adoption" (p. 222).

(5) Extent of Promotion Efforts by Change Agent

The rate of adoption is influenced by the extent of the promotion effort invested by the change agents. Rogers (2003) observed that: "The greatest response to change agent effort occurs when opinion leaders adopt, which usually occurs somewhere between 3 and 16 percent adoption in most systems" (Rogers, 2003, p. 222-223).

2.7 Implementation strategies for newsroom digitalisation

Regarding strategies for diffusion, Rogers (2003, pp. 236-362) suggests several constructs: (1) incentives; (2) strategies for getting to critical mass; (3) audience segmentation; (4) strategy of least resistance.

(1) Incentives

Noting that clients are presented with a great many incentives and subsidies by change agencies, Rogers (2003) suggests that the main function of an incentive for adopters is to increase the degree of relative advantage of the new idea. He classified the incentive to increase the rate of adoption into five forms (Rogers, 2003, p. 236-237):

a) Adopter versus diffuser incentives. Incentives may be paid either directly to an adopter or to another individual to persuade an adopter. An illustration of diffuser incentive is a finder fee paid to someone for recruiting a new adopter.

b) Individual versus system incentives. Payments may be made to individual or to the system to which they belong.

c) Positive versus negative incentives. Most incentives are positive in that they reward a desired behaviour change (such as adoption of a new idea), but it is also possible to penalise an individual by imposing an unwanted penalty or by withdrawing some desiderata for not adopting an innovation.

d) Monetary versus non-monetary incentives. While incentives are often financial payments, they may also take the form of some commodity or object that is desired by the recipient.

e) Immediate versus delayed incentives. Most incentives are paid at the time of adoption, but others can be awarded only at a later time (such as when adoption of contraceptives has an effect on fertility).

Rogers (2003) observed that "any combination of these five types of incentive policies can be awarded in a given situation, depending on which particular combination of incentives has the desired influence on the diffusion and adoption of innovations" (p. 237).

(2) Strategies for getting to critical mass

Rogers (2003, pp. 361-362) also proposes strategies which can be employed to achieve critical mass.

a) Highly respected individuals in a system's hierarchy should be targeted for initial adoption of the interactive innovation.

b) Individuals' perceptions of the innovation can be shaped, for instance, by implying that adoption is inevitable, that it is very desirable, or that the critical mass has already occurred or will occur soon.

c) The innovation should be introduced to intact groups in the system whose members are likely to be relatively more innovative.

d) Incentives for early adoption of the interactive innovation should be provided at least until a critical mass is reached.

(3) Audience segmentation

Rogers (2003) suggests an "audience segmentation" (p. 299) strategy in which a different communication channel and/or messages is employed to reach different sectors of the audience. This strategy is based on the perception that there are many significant differences between earlier and later adopters of innovation in terms of their (1) socio-economic status, (2) personality variables and (3) communication behaviour (Rogers, 2003, p. 299).

(4) Strategy of least resistance

Rogers (2003, p. 296) suggests that change agents should pursue a segmentation strategy of greatest resistance, in which communication efforts are concentrated on the sector of the audience who are lowest in socio-economic status, who feel the least need for the innovation, and who would ordinarily be the last to adopt. This strategy is derived from the idea that the "innovativeness/needs paradox" (Rogers, 2003, p. 296) should be avoided to narrow gaps between the information-rich and the information-poor in a social system. The innovativeness/needs paradox means that individuals who might need an innovation most (the less educated, less wealthy and the like) are generally the last to adopt it (Rogers, 2003, p. 295).

To give a few concrete examples, as digital news production system are adopted, the work roles of some newsroom employees change and implementation incentives and strategies, such as monetary reward, sanction and verbal threatens, are critical to assist them to adjust successfully to the transformation. Singer (2004) shows an instance of monetary reward provided by the organisation to promote an innovation. Examining newsroom convergence – combination of technologies, products, staff and geography among their previously distinct provinces of print, television and online media – Singer found that journalists accustomed to "follow the money" are well aware of whether colleagues are being rewarded financially for contributions to convergence.

Explaining observability, one of the five attributes of innovation, Singer (2004) noted that managers thought convergence was simply part of the job now – though recognition is occasionally forthcoming, such as a monthly award to one Dallas journalist deemed to be "fighting the good synergy fight" (p. 12) or a US$50 gift certificate with the online retailer, Amazon.com, for reporters in Sarasota, Florida.

Journalists in Lawrence, Kansas, got "a little round of raises" (p. 12) for their convergence efforts. However, in Tampa, Florida, most journalists "felt strongly that they were being asked to do a lot more work for little or no extra pay" (Singer, 2004, p. 12).

In addition, Leonard-Barton (1988) suggests implementation characteristics which set conditions for managers to design their implementation strategies in three aspects: (1) increasing "user involvement" (p. 615); (2) adding "sponsors and champions" (p. 615); and (3) creating "mutual adoption of the organisation and the technology" (p. 615). User involvement has been suggested as an effective implementation tactic in previous studies because it helps users to develop commitment to the innovation, to internalise the norms associated with its use, and helps create higher user satisfaction (Leonard-Barton, 1988, p. 615). Leonard-Barton indicated that sponsors have political influence and champions "guide innovations through the organisational decision-making process" (p. 615). Leonard-Barton also suggested that implementation strategies are likely to succeed with "managers who are able to direct implementation as a process of mutual adaptation of both the new technology and its intended user organisations" (p. 618).

Lin (2007) combines Leonard-Barton's (1988) three strategies into four additional implementation strategies which she found, from her empirical research, are critical to implement digital TV news production systems successfully: (1) communication, (2) top management support, (3) gradual implementation, and (4) reducing the gap (pp. 160-172).

2.8 Results and consequences of a digital TV news production system

This research examines how the consequences of adopting NDS can be understood in terms of Rogers' diffusion of innovation theory. Noting that "in spite of the importance of consequences, they have received relatively little study by diffusion researchers" (2003, p. 436), Rogers classified consequences into three dimensions (2003, pp. 442):

(1) desirable versus undesirable consequences;
(2) direct versus indirect consequences; and
(3) anticipated versus unanticipated consequences

Desirable consequences represent functional effects of an innovation, while undesirable consequences are the dysfunctional effects of an innovation. The analysis should consider the fact that the adoption of an innovation may have effects on individuals other than the adopters, and that the consequences of adoption can affect everyone in a social system. Analysis might find, for example, that an innovation is not functional for certain individuals in a system, while it is functional for the system as a whole. For example, junior journalists may enjoy the ease of utilising NDS, while senior journalists may find adapting to the new system burdensome. Rogers generalises: "The effects of an innovation usually cannot be managed so as to separate the desirable from the undesirable consequences" (Rogers, 2003, p. 445).

Direct consequences occur as an immediate result of adoption of an innovation while indirect consequences are the changes to individuals and the social system due to direct consequences. Indirect consequences are "consequences of consequences" (Rogers, 2003, p. 446). Finally, changes that are recognised and intended represent anticipated consequences; unanticipated consequences are neither recognised nor intended.

Typically, information about desirable, direct and anticipated consequences is available to adopters. However, information about unanticipated consequences is often not available until after adoption has occurred. Rogers found that these three classifications of consequences are interrelated, as reflected in this generalisation.

Among other researchers who have paid little attention to the consequences of those innovations, Aviles et al. (2004, p. 87) explored (1) the perceived rationale for digitisation; (2) its impact on workflow and multi-skilling, and (3) the changes it has generated in journalistic practice. According to Aviles et al. (2004), digitalisation seems to make an "ambivalent impact on journalism" (p. 99), and multi-skilling makes it difficult for journalists to conform to the established journalistic norms, such as "double-checking of sources and finding contextual information" (p. 99). On the

other hand, digital archives allow journalists to "contextualise their stories more completely" using file material (p. 99). They illustrated that in the Spanish newsrooms, principally, journalists must now edit pictures on their personal computers, whereas "In Britain, there are journalists who edit their own pictures but this is by no means the norm" (Aviles et al., 2004, p. 95).

In addition, Aviles and Leon (2002) addressed the detailed changes introduced into newsroom practices, that is, "the process of news production, work organisation and professional routines focusing on whether by using the new digital news production system skilfully, journalists were able to gather, process and deliver the news more efficiently" (p. 357). They illustrate how Spanish journalists adapted to the multi-skilling practices.

> Since pictures are one of the aspects that reporters must worry about, they tend to make sure that they have enough interesting visual material to elaborate stories. Tele 5's manager of technical directors argues that journalists are now more interested in picture editing, since they know more about visual grammar. In addition, the fact that one person writes the text and edits the pictures allows for a better combination of pictures and words. Professionals increasingly consider multi-skilling as "a requisite in their work" (Aviles and Leon, 2002, p. 365).

Regarding the quality of news after newsroom digitalisation, Aviles et al. (2004) point out that: "The newly established routines tend to emphasise the importance of speed, which sometimes raises concern about the quality of the output" (p. 99). They add that journalists today are less likely to provide context because digital technology makes them process news much more rapidly and increasingly puts pressure on them to get exclusive news. In addition, reporters are pressed to provide more on-the-spot, immediate live news. Furthermore, journalists are sometimes stressed and feel that the quality of their products is worsening (Cottle and Ashton, 1999). In addition, Domingo (2006) notes that it is the logic behind the adoption of digital technologies that the digital news production system should make roles in the newsroom more flexible and, this way, "produce more with the same human resources" (p. 39).

Concerning journalists' attempts to evade editors' supervision for their picture editing, Aviles et al. (2004) noted that some Spanish journalists in a digital environment finish their items just before going on air to prevent their editors from supervising them (p. 95). As a result, the editorial control mentioned above can be a cause of trouble, since journalists may feel their autonomy has been violated by the editors. Deuze (2005, p. 449) supports this concern for journalists' independence by noting that most, if not all, innovations in journalism are likely to be met by distrust concerning their perceived "impact on editorial autonomy" (see, for example, Singer, 2004 and Boczkowski, 2004) on journalists and newsroom convergence). He adds: "This elevates editorial independence to the status of an ideological value in that it functions to legitimise resistance to (as well as enabling piecemeal adaptation of) change" (Deuze, 2005, p. 449).

With regard to the speed of news transmission, Aviles et al. (2004) note that technological developments including the digital newsroom, the portable satellite dish and the portable digital editing suite made journalists "speed up the gathering, processing and editing of news", and also led journalists to "reprocess and repackage news" (p. 97). Furthermore, they maintain that while technological developments "seem to enhance the journalistic function, making it more efficient" (p. 97), they prompt worries about "the quality of the content produced and the impact of the changing nature of news production on journalists' ability to retain their professional values" (p. 97).

Organisational innovation

Newsroom digitalisation can cause changes in job descriptions by transferring tasks from one position to another, or by fusing two or more job descriptions or by adding new tasks to traditional job descriptions. According to Rintala and Suolanen (2005, pp. 56-58), newsroom digitalisation can cause changes in job descriptions in three ways; such as the transferring, the fusion of job description, and the adding of tasks. Firstly, the transfer of tasks means that the tasks of some professional groups were transferred to the job descriptions of others. Regarding this, Rintala and Suolanen (2005) found that the transfer of tasks in radio programme production concerned mainly the transfer of sound editors' tasks to the journalists.

Secondly, the fusion of job descriptions means that jobs that were previously performed by the two or more separate professional groups were fused into one. Findings of Rintala and Suolanen (2005) show that, in radio and in television, the changes in job descriptions were predominantly caused by the transfer of tasks, whereas in the television news channel, changes in job descriptions resulted from the fusion of job descriptions. They also found that the total fusion of all tasks of video editors into the job descriptions of journalists was considered impossible.
The transfer of tasks enabled journalists to master the programme production more autonomously, but simultaneously it narrowed the job descriptions of sound and video editors and cameramen.

Thirdly, the adding of tasks meant that new tasks, mainly related to the emergence of new media, were created and added to existing job descriptions. Rintala and Suolanen (2005) argue that new tasks were particularly connected to "the emergence of new digital tools" (p. 58), such as the Internet and digital mobile terminals.

Lin (2007) noted that the adoption of a digital TV news production system "adapts organisational structures and news work" (p. 202). She gave examples from the four Taiwanese TV news broadcasting companies (ETTV, FTV, DA-AI and TVB), which added new divisions and new positions as well as adjusting job content in order to incorporate digital technology into daily practices.

According to Aviles et al. (2004), while digital technology has been adapted to current newsroom structures, in the structure of Spanish digital newsrooms, a number of significant changes have been made. In particular, Telecinco and Antena 3 created two new job: system managers and media managers. System managers usually have an engineering background and they take care of the technological aspects of the equipment, whereas media managers take charge of the traffic of information inside the newsroom, they assign "profile lines" (access to the main server) to every reporter in order to edit the news items (p. 93).

2.9 Summary

In this chapter, the research literature on newsroom digitalisation focusing on its process and implications has been critically reviewed. Section 2.1 outlined research on (1) newsroom digitalisation, (2) multi-skilling and (3) newsroom convergence, concentrating on the literature of leading scholars of European and Asian countries. This study also focuses on the process of newsroom digitalisation and factors influencing the adoption of the digital news production system, employing Rogers' (2003) innovation diffusion theory. Rogers is widely acknowledged as one of pioneers in the field of innovation diffusion research and its current theories. In particular, his research on the diffusion of innovation has provided a rich framework for understanding the factors and processes involved in the adoption of innovations in a wide range of research areas.

The researcher argues that the process of newsroom digitalisation can be investigated at both the organisational level, which focuses on implementation strategies, and at the individual level, which puts emphasis on the decision-making processes of individual members of the organisation adopting digitalisation. This study gives priority to the individual level. A comprehensive overview of the research design and methods used in this study will be presented in the next chapter.

Chapter 3 Research Design and Methods

3.1 Research questions

This research tries to shed some light on questions for which researchers into the digital news production system have not been able to provide thorough and empirically grounded explanations. The literature has mostly been prospective, normative, descriptive and/or intuitive, but little data has been collected to investigate the current evolution of the digital news production system – that is, the process of adopting the digital news production system and the new work practices arising from this process. The aims of this study can be summarised in the following questions:

RQ1.
What was the process by which SBS introduced the digital TV news production system into the SBS newsroom in terms of the organisation?

RQ2.
What was the process by which SBS introduced the digital TV news production system into the SBS newsroom in terms of the journalist?

RQ3.
What specific changes, if any, occurred in the SBS newsroom after adoption of the digital TV news production system?

These questions require the types of evidence that provide a grasp of the fundamental attitudes of the journalists towards the digital system and the reasons they showed such attitudes. For this purpose, this research conducted an extensive review of appropriate trade journals to provide background and context for the study of the SBS newsroom digitalisation project.

Materials from the media industry include news reports of three major media journals in Korea; *Journalist Association of Korea*, *Media Today* and *Newspaper & Broadcasting* as well as data supplied by SBS (Seoul Broadcasting System), KBS (Korean Broadcasting System) and MBC (Munhwa Broadcasting Corporation).

Journalist Association of Korea is a weekly newspaper published by the Journalist Association of Korea, an organisation representing most Korean journalists, except news executives and other management groups. *Media Today* is also a weekly newspaper, and the only commercial media critic in Korea. *Newspaper & Broadcasting* is a monthly journal published by the Korean Press Foundation. The three journals cover subjects ranging from media policies to media production. In particular, there are occasionally significant articles that describe news production practices in Korean journalism.

However, the major materials of this study are gathered from field research involving qualitative and quantitative methods. The qualitative method includes in-depth thematic interviews, a group discussion with SBS journalists, participant observations and analysis of in-house documents. In addition, the study utilises a quantitative method which employs questionnaire surveys as a supplementary method of gathering data.

3.2 Case study

Yin (2003) defines a case study as "an empirical inquiry that investigates a contemporary phenomenon within its real-life context when the boundaries between phenomenon and context are not clearly evident" (p. 13). Case study is, as Garrison and Dupagne (2003) note, "best used to understand complex social and organisational issues" (p. 17). On the other hand, Eisenhardt (1989) writes that case study "focuses on understanding the dynamics present within single settings" (p. 534). According to Yin (2003), case study evidence to answer research questions originates from six sources: "documents, archival records, interviews, direct observation, participant-observation, and physical artifacts" (p. 83). Regarding this point, Eisenhardt (1989) observes that typical data collection methods for case studies are "archives, interviews, questionnaires, and observations." He adds that "the evidence may be qualitative (e.g., words), quantitative (e.g., numbers), or both" (pp. 534-535).

With respect to the intellectual value of case studies in organisation research, Koza and Lewin (1999, p. 641) draw on Simon's (1947) study of decision-making processes in administrative organisations, arguing that case studies could provide

useful descriptions of the great variations in organisation structure and process. Concerning the strengths and weaknesses of case study methods, George and Bennett (2005) note that case studies are "generally strong precisely where statistical methods and formal models are weak" (pp. 19-22). George and Bennett identify four strong advantages of cases methods mainly focused on those of research using hypotheses such as:

> make them valuable in testing hypotheses and particularly useful for theory development: their potential for achieving high conceptual validity; their strong procedures for fostering new hypotheses; their value as a useful means to closely examine the hypothesised role of causal mechanisms in the context of individual cases; and their capacity for addressing causal complexity.

On the other hand, they demonstrate the trade-offs, limitations, and potential pitfalls of case studies (George and Bennett, 2005, p. 22):

> Recurrent trade-offs include the problem of case selection; the trade-off between parsimony and richness; and the related tension between achieving high internal validity and good historical explanations of particular cases versus making generalisations that apply to broad populations. The inherent limitations included a relative inability to render judgements on the frequency or representativeness of particular cases and a weak capability for estimating the average "causal effect" of variables for sample. Potential limitations can include indeterminacy and lack of independence of cases.

As Schudson (2000) concluded in a review of research on newsroom dynamics, there has been "little academic attention to the concrete consequences of the technological transformation of news production, both in print and in television" (p. 182). In his study on the process of adopting multimedia and interactive technologies in newsrooms, Boczkowski (2004) illustrates that "variations in organisational structures, work practices and representations of the users are related to different ways in which newsroom workers adopt these technologies" (p. 198). In the same context, the ways in which SBS journalists adopted technologies of digital news production were connected directly to organisational structures, work practices and representations of them. In addition, Meier (2007) notes that "it is almost impossible to generalise

answers in a case study of new models of newsroom organisation" (p. 17) because core requirements are varied from newsroom to newsroom, and adds as follows:

> For example, there is work culture, work pressure, economic pressure and the architectural design of the newsroom to be considered, as well as detailed additional innovation goals and strategies. However, case studies do provide an opportunity to evaluate new models of organisation and can even offer – with the appropriate research design – useful data for the editorial staff. Therefore, it would be desirable to have a number of methodically comparable case studies to work out the differences and similarities, pros and cons of various newsroom models and their effect on journalistic quality. Generally speaking, there is a research deficit of cross-national studies of modern newsroom management (Meier, 2007, pp. 17-18).

The researcher carried out the case study based on the guiding principles for undertaking case study research which Atkins and Sampson (2002. p. 107) suggested as shown in Table 3.1. They developed this set of guidelines by "identifying 'best practices' in in-depth single case study research" (p. 108) and combining their own checklists with work that had been completed by McKay and Marshall (2000).

Table 3.1 Critical Appraisal Guidelines for Single Case Studies

Element	Evaluation criteria
Way of thinking	1. Is a credible argument given for why a case study is appropriate? 2. Are the philosophical stance and perspective of the authors stated? 3. Is there evidence that any bias is taken into account when performing data analysis?
Way of controlling	4. Have the criteria for analysis been confirmed by an independent researcher? 5. Have any opportunities for various forms of triangulation been exploited? 6. Is the research process auditable? 7. Has relevant literature been used to support the selection of an appropriate theoretical framework to guide the research? 8. Does the study use appropriate theory to support the findings. 9. Does the study describe how the conclusions were arrived at and how they are justified by the results? 10. Are assertions / conclusions made well grounded in the data?
Way of working	11. Are the criteria used to select the appropriate case and participants clearly described? 12. Does the study provide a clearly formulated question describing an important IS issue? 13. Are the approaches and techniques for data collection and analysis described in detail?

	14. Is the conceptual framework for the research explicitly described?
Way of supporting	15. Does the study describe an orderly process for the collection of data? 16. Does the study describe and employ a systematic way to analyse the data? 17. Is the history and context of the research clearly described?
Way of communicating	18. Are the aims and objectives of the study clearly stated? 19. Are limitations to the study acknowledged and described? 20. Does the study suggest if and how the findings might be transferable to other settings? 21. Is sufficient detail given to allow readers to evaluate the potential transferability of the research to other contexts? 22. Does the report identify questions or issues for future research? 23. Is the presentation of the research appropriate to the intended audience? 24. Could this research potentially make a contribution to the work of IS practitioners? 25. Does the research provide new insights into some aspect of IS work? 26. Is the research presented in such a way that there is evidence of logical rigour throughout the study? 27. Does the study place the findings in the context of IS practice? 28. Does the study place the findings in the context of IS research? 29. Is the research process open to scrutiny?

Source: Atkins and Sampson (2002, p. 107)

The essential problems for this study to investigate include why individual journalists at some TV stations embrace the digital TV news production system unreservedly while others resist or ignore the same innovation. To put it more concretely: 1) the process by which SBS introduced the digital TV news production system into the SBS newsroom in terms of the organisation; 2) the process by which SBS introduced the digital TV news production system into the SBS newsroom in terms of the journalist; 3) specific changes that occurred in the SBS newsroom after adoption of the digital TV news production system.

In order to explore these problems, it is necessary to examine evidence that provides an understanding of the original intention of a news organisation, journalists' attitudes towards the new technology, and the empirical verification of the efficiency of newsroom digitalisation in practice. The first three questions rely heavily on in-depth

interview answers from journalists and decision makers (managers), while observation and interviews play an important role in the last question. During data analysis, both overt observation in the news departments and analysis of documents such as meeting memos, training plans and organisational files were critical to triangulate the interview data, which can be biased by politics or peer pressure.

Regarding the document analysis, Patton (2002) suggests that special challenges in analysing documents include the following: gaining access to documents; understanding how and why the documents were produced; determining the accuracy of documents; linking documents with other sources, including interviews and observations; deconstructing and demystifying institutional texts (p. 499). On the other hand, Creswell (2003) illustrates the advantages of the document review method. These include: enables a researcher to obtain the language and words of participants; can be accessed at a time convenient to the researcher – an unobtrusive source of information; represents data that are thoughtful, in that participants have given attention to compiling it; and, as written evidence, it saves a researcher the time and expense of transcribing (p. 187). Creswell (2003) also shows the limitations of the document review method. These include: may be protected information unavailable to public or private access; requires the researcher to search out the information in hard-to-find places; requires transcribing or optically scanning for computer entry; materials may be incomplete; the documents may not be authentic or accurate (p. 187).

This study used in-house documents including "The SBS Digital Newsroom Plans" provided by Lee, Head of the NDS project, "Rate of increase in news output" and "Manpower structures in the SBS picture-editing unit" provided by Seo, the SBS's Head of the Picture Editing unit. The researcher persuaded people concerned such as Lee and Seo to provide their in-house documents. When they found the purpose of this research, they willingly supported the researcher in various ways.

After gaining access to documents, the researcher investigated how and why those documents were made, and evaluated the accuracy of documents. The researcher found that those documents were reliable because the in-house documents were produced to submit to the SBS management. In particular, accuracy of those in-house documents was investigated through in-depth interviews.

This chapter presents a discussion of (a) the pilot study and field study, (b) in-depth interviews, (c) a questionnaire survey and (d) participant-observation. The section (c) on the questionnaire survey provides some further explanation about detailed procedures such as: (1) the consent form presented to each subject, (2) the instrument employed in data collection and the process by which data were collected, (3) reliability and validity and (4) data analyses.

3.3 Pilot study

Before conducting the full in-depth interviews, which began in May 2007, the researcher completed two pilot studies. In order to identify potential respondents, the researcher constructed the unstructured questionnaire and determined the interview schedule. The first preliminary field visit was made from May to June 2006. In addition, a second visit was undertaken for two months from early July to the end of August 2006.

During the period, participant observation was made to grasp the situation of the changed work practices after implementing the digital news production system. In addition, the researcher was able to attend an editorial meeting with the special permission of the Editor-in-Chief of the SBS newsroom. In particular, the researcher interviewed journalists (in-depth interviews), IT and news managers (conversational interviews) about the adoption and implementation of the digital news production system. At the same time, he observed the news department for two weeks. This pilot study gave the researcher more understanding about TV news digitalisation, and refined the interview questions from multiple case studies and observation foci accordingly.

3.4 Field study

The major period of data collection was from May 2007 to September 2007. The researcher spent four months at SBS. He joined in a daily news editorial meeting and conducted in-depth interviews with journalists and conversational interviews with news and IT managers in work settings. Moreover, he observed the dynamics, collaboration and interaction in the newsroom, the editing bays and the control room

in both primetime news and off-peak news time. However, in the earlier stages of gaining the access to the research site, the researcher found that the then Editor-in-Chief had altered his stand completely. The researcher never expected that the Editor-in-Chief would treat him with coldness, indeed this person used to be the researcher's mentor when both of them worked together for the MBC and SBS for more than eighteen years. Furthermore, the director had offered his cooperation on the researcher's project when the researcher visited his office in mid-2006.

The Editor-in-Chief allowed the researcher only participant observation and asked him not to conduct any questionnaire survey or in-depth interviews. An ostensible reason for not allowing research activities was that the SBS news headquarters was conducting its own survey for improving the quality of SBS news programmes. The director thought that the researcher's study in the SBS newsroom could significantly affect the outcome of his own survey. SBS set up a special taskforce on newsroom digitalisation, which consisted of seven members (see Table 4.1). This taskforce was led by an Editor in charge of News Strategy and Coordination. The project team had held meetings every week for three months from March 2006 to improve their news programmes. In fact, the then SBS management was very concerned about dramatically declining TV news ratings due to the fierce competition between the established terrestrial TV broadcasting companies and new media such as the Internet and cable broadcasting.

To make matters worse, the researcher experienced unexpected difficulties in gaining cooperation from the SBS journalists. There had been a tense atmosphere in the SBS newsroom since mid-July 2007. The researcher's visits to SBS coincided with the death of two Korean Christian missionaries in Afghanistan around this time, following the kidnapping by armed Afghan Taliban rebels of 23 Koreans who were engaged in missionary work in rural areas of Afghanistan. The story dominated the main SBS News service, with regular live crosses to correspondents of the Ministry of Foreign Affairs, the Ministry of National Defence, the church, which had sent victims to Afghan, and families of the victims. The pastor who led the team was beheaded and another young man was shot dead by the rebels.

Furthermore, the Korean government announced that the Presidents of North and South Korea would have summit talks in Pyongyang, North Korea, for three days from 31 August during the official visit. Although the talks were postponed later, due to a natural disaster, which left a great many North Korean people homeless, these events overloaded SBS journalists with busy schedules from July 2007. Consequently, the researcher was not welcomed when he asked them to grant in-depth interviews or fill out the questionnaires.

Nevertheless, the researcher had no choice but to do his best to gain their cooperation, because he did not have enough time to wait around for things to settle down. Finally, the researcher did gain the access when he told the Editor-in-Chief, as a last resort, that he would negotiate directly with the Editor-in-Chief's superior, the Vice President in charge of News and Sports Headquarters. The Editor-in-Chief went to the Vice President with the researcher and told him of the decision. The Vice President allowed the researcher to conduct field research in the SBS newsroom on the condition that the thesis should not contain any findings which could give SBS a bad reputation.

The authoritarian attitudes of the editors made the researcher feel constrained and consequently he had to conduct the field research having regard to their feelings. Even when some reporters advised the researcher to take photographs, which could help capture aspects of the work environment, he declined to, so as not to be in opposition to the editors. When, with much difficulty the researcher started the interviews, he focused specifically upon the reporters who had played significant roles when the digital news operation system was introduced.

3.4.1 In-depth interviews

The researcher used both a semi-structured interview schedule and open-ended questions to news workers in different units: reporters, camera crews, editors, directors and several external experts. Interviews were focused on the adoption process from the perspective of journalists and other support staff; factors affecting innovation diffusion; the responses to the management's implementation strategies and tactics; and the implications for their work practices.

In this study, thirty journalists and news staff were chosen as purposive sampling from the 155 journalists of the newsroom and more than 100 staff of several operational units. Most interviews were conducted in the newsroom interview rooms, from May to September 2007. The researcher believes the degree of rapport during the interviews was very high, because most of the interviewees were the researcher's intimate colleagues when he worked for SBS from 1990 to 2003.

For the interviews, which were carried out under conditions of anonymity, twenty-four journalists, six operational staff and three external experts were chosen. However, only one external expert (EX2) was cited twice because interviews of other two external experts were found not to be relevant to this study. Based on previous working experience in TV news departments, the researcher selected news crews carefully and interviewed them during their available time in order not to disturb them. Each convenience-sampling interview, which lasted one to two hours, was carefully audio-taped and later transcribed. Tables 3.2, 3.3 and 3.4 illustrate the interviewee categories (A copy of the questionnaires can be seen in appendix 1).

Table 3.2 Interviewee categories (Journalists)

Journalists		Number
Ranks	Senior	16*
	Junior	8
Total		24

*This group included Lee Sun-myung, the head of the project, who led the project team for newsroom digitalisation, and deputy editor Kim Kang-suk, the project team member who liaised with IT staff representing journalists.

Table 3.3 Interviewee categories (Operational Staff)

Staff	Number	Remarks
Camera crew	1	He tested digital cameras with a view to purchase.
Picture editor	2	One of them was a member of the project team.
Graphic editor	1	
Engineering staff	1	Later he joined OBS, a newly launched TV station.
IT staff	1	He designed the SBS digital news production system.
Total	6	

Table 3.4 Interviewee categories (External Experts)

Experts	Number	Remarks
Multi-skilling expert	1	EX1= Columnist writing on newsroom innovation
Convergence expert	1	EX2= Editor-in-Chief of CBS Radio who implemented newsroom convergence

News website expert	1	EX3= Designer of CBS news website, she joined SBS later.
Total	3	

As Aquino (2002, p. 17) noted, most news organisations have different management structures and consequently have their own job titles for their senior staff. Huang et al. (2006, p. 88) classify news practitioners in the US media companies into editors and news professionals. They define editors as (1) daily newspaper editors in charge of newsroom operations or online news operations, and (2) news directors in charge of newsroom operations in a commercial TV station with news content. In addition, they define news professionals as non-management and non-clerical news staff, such as reporters, anchors (presenters in the UK), camera crews, designers, producers, web staff and others.

According to the SBS's job titles, as translated officially into English by the overseas business team, the news executive group is under the supervision of the Vice President in charge of news and sports, and consists of the Executive Director (the Editor-in-Chief), the Deputy Executive Director (Deputy Editor-in-Chief) and Chief Producer (Editor). The Executive Director (the Editor-in-Chief) is in charge of the entire process of news production including newsgathering and news processing with the assistance of an Editor in charge of news strategy and coordination. The Chief Producer (Editor) is the head of the desk. However, this study uses the more familiar job titles (given in parentheses) rather than SBS's own titles.

In SBS, desks are divided into specific departments such as Political News, Economic News, General News (City Desk), National News, Culture News, International News, Internet News and other sectors. Reporter groups are directly under the Editor in routine work. They cover news events under the control of the Editor, ranging from the selection of news issues, and covering news events to the decision as to their final news material. This study here uses the term "journalist" as having the same meaning as "reporter."

The interviews were transcribed verbatim in Korean, and the data were analysed for themes (e.g., resistance). A list of identified labels was developed from the data by coding several interview transcripts. Refinement of the categorizing scheme took

place during analysis when a new category (e.g., persuasion) emerged, and previously coded data were reviewed as a new category was introduced (see Table 3.5). The data were then clustered under the established category headings and themes were identified. The final step was to identify and define theme statements and translate them into English that provided a clear understanding of the population, phenomena, and process studied.

Table 3.5 List of themes for analysing

Themes	Sub-categories	Categories
System	Process in terms of the organisation	Process in terms of the organisation
Organisation		
Technology		
Diffusion		
Innovation		
Cost		
Training		
Profit		
Management	Strategies	
Instability		
Conflict		
Persuasion		
Trust		
Compensation		
Suitability		
Coercion		
Oppression		
Rejection		
Preparation		
Participation	Process in terms of the journalist	Process in terms of the journalist
Apprehensions		
Decision		
Evaluation		
Confirmation		
Complexity		
Suitability		
Trial		
Continuance		
Resistance	Resistance	
Obstacles		
Change	Implications	Implications
Seniority		
Revolution		

3.4.2 Questionnaire survey

The researcher collected data though a questionnaire survey distributed to SBS journalists. Wimmer and Dominick (2003) illustrate the advantages of such a survey; (1) They can be used to investigate problems in realistic settings; (2) A large amount of data can be collected with relative ease from a variety of people; (3) Data helpful to survey research already exist; (4) Surveys are not constrained by geographic boundaries; (5) The cost of surveys is reasonable when one considers the amount of information gathered (pp. 167-168).

Furthermore, Weisberg et al. (1996) observe that when a researcher is interested in public attitudes and mass behaviour, "surveys play important roles in social science" (p. 20), because only a survey can provide mass attitude data. In addition, Buddenbaum and Novak (2001) observe that surveys cause "fewer ethical problems than most other kinds of human-subject research" (p. 150).

Although survey research has many advantages over other research approaches, it also has many disadvantages: (1) The most important disadvantage is that independent variables cannot be manipulated the way they are in laboratory experiments; (2) Inappropriate wording or placement of questions within a questionnaire can bias results; (3) The wrong respondents may be included; (4) Some survey research is becoming difficult to conduct (Wimmer and Dominick, 2003, p. 168).

A participant information form (see Appendix 2) and a consent form (see Appendix 3) were distributed to all of the participants who decided to join in the study. The consent form included information about (a) the title of the project, (b) the researcher's name and contact information, (c) the purpose of the study, (d) an explicit statement that participation was voluntary, (e) a detailed statement explaining that participation in the study involved minimal risk and (f) a detailed description of steps taken to ensure subject confidentiality. They also had the choice of declining to take part in the questionnaire survey. After reading the consent form, participants had to sign it. Tables 3.6 to 3.11 illustrate the personnel organisation of journalists who participated in the questionnaire survey.

Table 3.6 Respondents of the questionnaire survey

Departments		Frequency	%
Political News		20	16.0
Economic News	Department	13	10.4
	News & Living	2	1.6
General News	Unit 1	15	12.0
	Unit 2	10	8.0
Cultural News		11	8.8
International News		11	8.8
Internet News		3	2.4
Contents Development		4	3.2
News Editing 1, 2		16	12.8
Feature News 1		5	4.0
Feature News 2		7	5.6
Others		8	6.4
Total		125	100.0

Table 3.7 Positions of respondents

Position	Frequency	%
Reporter	50	40.0
Deputy Sub-Editor	30	24.0
Deputy Editor	29	23.2
Editor	15	12.0
Deputy Editor-in-Chief	1	.8
Others	125	100.0

Table 3.8 Gender of respondents

Gender	Frequency	%
Male	112	89.6
Female	13	10.4
Total	125	100.0

Table 3.9 Age of respondents

Age	Frequency	%
20s	4	3.2
30s	56	44.8
40s	60	48.0
50s	5	4.0
Total	125	100.0

Table 3.10 Education level of respondents

Degree	Frequency	%
BA	87	69.6
MA	35	28.0
PhD	3	2.4
Total	125	100.0

Table 3.11 Period of service of respondents

Period	Frequency	%
4 years*	10	8.0
5 years–10 years	25	20.0
11–15 years	44	35.2
16–20 years	36	28.8
21–25 years	10	8.0
Total	125	100.0

*Four years since joining SBS (joined SBS in Autumn 2003 when the News Digital System was first introduced).

The questionnaire survey instrument consisted of 50 items in total (see Appendix 1), of which 32 items explored participants' perceptions and experiences of NDS (see Appendix 4). Responses to each of these items were recorded through a five-point Likert scale. Response options in the scale were; strongly agree, agree, neutral, disagree and strongly disagree. Questionnaire survey forms were completed by 125 journalists all of whom were using the digital technology.

The best way to discover whether a research instrument is adequately designed is, as Wimmer and Dominik (2003, p. 182) suggest, to pretest it – that is, conduct a mini-study with a small sample. This is to determine whether the study approach is correct and to help refine the questions. Areas of misunderstanding or confusion can easily be corrected without wasting time or money. Accordingly, the questionnaire survey forms were tested in advance with five SBS journalists, and the researcher asked them for feedback on the face validity and readability of the questionnaire, and for any other suggestions they had. In response to their comments about the wording of some questions, the researcher rewrote the questionnaire where he deemed it appropriate.

To check for consistency in the responses given, the researcher also used Cronbach's alpha, which was generated to assess the reliability of the survey instrument. Cronbach's alpha, a statistic, is commonly used as a measure of the internal consistency reliability of a psychometric instrument. Cronbach's alpha measures how well a set of variables or items measures a single, one-dimensional latent construct. According to Wimmer and Dominick (2003, p. 58), Cronbach's alpha uses the analysis of variance approach to assess the internal consistency of a measure, which involves examining the consistency of performance among the items that compose a

scale. This study used the SPSS (originally, Statistical Package for the Social Sciences) computerisation of Cronbach's alpha reliability.

SPSS was used to compute the Cronbach's alpha reliability coefficient. The alpha value obtained acts as the reliability of the extracted factor. The researcher computed an alpha value from all the variables for checking the reliability of these variables. Gliem and Gliem (2003) indicated that Cronbach's alpha reliability coefficient normally ranges between 0 and 1. The closer Cronbach's alpha coefficient is to 1.0, the greater the internal consistency of the items in the Likert-type scale (p. 87).

According to Field (2009), Cronbach's alpha "values around 0.8 are good (or 0.7 for ability tests and such like)" (p. 681). Nunnally and Bernstein (1994) also note that: "In the early stage of predictive or construct validation research, time and energy can be saved using instruments that have only modest reliability, e.g., .70." (p. 264-265). However, contrary to expectations, the initial assessment showed that the item analysis of this study indicated that the value of Cronbach's alpha was 0.559, which was lower than the acceptable value of Cronbach's alpha. If any of the values in the column headed "Alpha if Item Deleted" are higher than the final alpha value, according to Pallant (2007), the researcher may remove this item from the scale, and do this only if the final "alpha value was low (less than 0.7)" (p. 98). Subsequently, the researcher had no choice but to eliminate nine response items out of 41 items of Group A, and all nine items of Group B from analysis to increase the Cronbach's alpha value to larger than 0.7 (see Appendix 1 and Appendix 4).

The nine excluded items were as follows: (a) I would like to return to the analogue system (b) The innovation of the SBS newsroom organisation was radical (c) There was an oppressive atmosphere among the journalists in making the digitalised newsroom (d) News reporters resisted the new digital system (e) I feel frustrated because of the digital news production system's technical aspects (f) I had to face pressure in cooperating with digitalisation even though you did not want to (g) Implementing the digitalised system was for economic reasons rather than for better journalism (h) SBS's digitalisation of the newsroom was intended to reduce staff (i) Multi-skilling will raise concern about the quality of output. Table 3.12 shows the reliability of statistics after these nine items were eliminated.

Table 3.12 Reliability statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
0.721	0.754	32

3.4.3 Participant Observation

The most remarkable advantage of participant observations is, as Wimmer and Dominick (2003) noted, that the study occurs "in the natural setting of the activity being observed and thus can provide data rich in detail and subtlety" (p. 117). Participant observations are classified along two major dimensions: (1) the degree to which the researcher participates in the behaviour under observation; and (2) the degree to which the observation is concealed (Wimmer and Dominick, 2003, p. 115). Considering the research problem, the degree of cooperation available from the SBS journalists observed, and ethical problems, this study used the "overt participation" technique, which means that those being observed also know the researcher, and the researcher goes beyond the observer role and becomes a participant in the situation.

With the aim of supplementing and challenging the data acquired from the interviews and the questionnaires by watching and analysing the whole process of news production, this study conducted participant observations of SBS newsroom practices almost at the same time as the in-depth interviews, once or twice a week for more than four months from the beginning of May to early September 2007.

The researcher's strength in this study was his "insider" status. In other words, the researcher carried out an "insider research" — where researchers "carry out a study directly concerned with the setting in which they work" (Robson, 2002, p. 382). He has prior knowledge of the SBS newsroom's practices and was able to use his direct involvement and prior knowledge as a former SBS journalist. Insider researchers, as Robson (2002) notes, "will have an intimate knowledge of the context of the study, both as it is at present and in a historical developmental perspective" (p. 382).

However, Robson (2002) also illustrates several disadvantages of insider research:

> Adding the role of researcher to that of colleague is difficult both for yourself and for your co-workers. Interviewing colleagues can be uncomfortable business, particularly in hierarchical organisations if they are higher in status than yourself. Supposing that you obtain confidential information, appropriately enough within the conditions of confidentiality of the research, is this going to affect your working relationship with colleagues? If you make mistakes during the study, you are going to have to live with them afterwards. More fundamentally, how are you going to maintain objectivity, given your previous and present close contact with the institution and your colleagues? (Robson, 2002, p. 382)

Some researchers argue that unfamiliarity can hone criticality, while familiarity may blunt it. Morse (1994) supports this argument, noting that: "Familiarity with the setting or previous acquaintance with the participants dulls the researcher's ability to view the setting with the sensitivity one would have when seeing it for the first time" (p. 27). Dimmock (2002) also maintains that "outsiders" may bring a "fresh perspective, one which may not only highlight key aspects of a particular culture, but recognise salient differences between it and other cultures" (p. 37).

On the other hand, Grady and Wallston (1988, pp. 30-31) illustrate five principles of insider research: try to foresee what conflicts are likely to arise in the study; make a plan for dealing with possible role conflicts; record responses as potential additional variables; collaborate with one or more colleagues who have considerable research experience, preferably from outside the setting; separate yourself from the role conflict. Considering all these complexities, the researcher reflected on his own role in the research and has been sensitive to his insider status and how it shaped the study. In particular, he kept it in mind that his primary responsibility in this study was the position of the researcher, not the former colleague, paying attention to Morse's (1994) argument that "if the researcher has a previously established work role in the setting, then qualitative work is handicapped" (p. 27).

Actually, playing a double role, as Robson (2002, p. 382) observed, was not easy both for the researcher and his colleagues. However, the researcher tried to maintain objectivity, given his previous and present close contact with the institution and his SBS colleagues. He was very careful not to tell them what the purpose or intention of

this study was to avoid any bias for or against the newsroom digitalisation project. Consequently, the researcher thinks that he was able to get answers that were free of all prejudice because he found that the interviewees of the SBS newsroom presented a variety of views. Interviewing colleagues who were higher in status than the researcher was almost impossible, he had no choice but to give up to have an interview with them. It was because he knew they felt offended when they were asked to be interviewed since respect for age and seniority is still a huge part of Korean culture.

The researcher, who left his job as a SBS journalist in June 2003, did not need to worry about how he was going to live with his former colleagues afterwards even if he made mistakes during the study. The researcher found that unfamiliarity could hone criticality, and familiarity with the setting or previous acquaintance with the participants, as Morse (1994) observed, "dulls the researcher's ability to view the setting with the sensitivity" (p. 27). Nevertheless, the researcher also found that he was able to overcome the danger of familiarity considerably because he paid scrupulous attention to avoid the problem of being acquainted with the research participants in the SBS newsroom. In particular, he always asked the subjects not to have any prejudice or bias.

Regarding the potential effects of that temporal distance, as Leonard-Barton (1990) observes, in a retrospective study the participant-informant "may not have recognised an event as important when it occurred and thus may not recall it afterwards" (p. 250). Hycner (1985) also notes that a retrospective viewpoint is different from "getting a description from someone while an experience is actually occurring" and that "a retrospective viewpoint is altered by time and therefore different from the experience itself" (online). In addition, Bansler and Havn (2004) observe that the researcher should endeavour "to avoid such problems as poor recall, hindsight bias and rationalisations" (p. 66).

However, in contrast to Leonard-Barton's (1990) remark, the researcher found that most SBS interviewees recognised the digitalisation project as significant when it occurred and they well recalled it afterwards because they had clear ideas about what happened during the project and what the implications are. Furthermore, they are

using the new digital news production system in the SBS newsroom at the time of the field study. Although a retrospective viewpoint is, as Hycner (1985) notes, inevitably different from getting an explanation from someone while an event is really happening, the researcher did his best to avoid such problems as poor recall, hindsight bias. In particular, whenever necessary, he asked the subjects whether they are talking about the period of introducing the digital system or the present state.

3.5 Summary

The aim of this study is to investigate how the digital TV news system was introduced into the SBS newsroom. For this purpose, this study reviewed extensive materials including appropriate trade journals to understand the background and context of the SBS project. However, the major materials for this study were collected from field research conducted by both qualitative and quantitative methods.

The qualitative methods consisted of in-depth interviews, a group discussion with SBS journalists, participant observations, and analysis of in-house documents, provided thanks to the support given by the people concerned with the topic of this study. On the other hand, this study employed a quantitative method of questionnaire survey as a complementary data-gathering device.

Chapter 4 Process of Implementing the Digital TV News Production System in Terms of the Organisation

This chapter discusses the process by which SBS introduced the digital TV news production system in response to RQ1: What was the process by which SBS introduced the digital TV news production system into the SBS newsroom in terms of the organisation? Using the qualitative data collected from interviews, group discussions, observations, in-house documents and quantitative data collected from a questionnaire survey, section 4.1 investigates the adoption process of SBS newsroom digitalisation. And then, section 4.2 examines the innovation process in organisational level, section 4.3 examines strategies for innovation, and section 4.4 summarises investigations into the main findings discussed in this chapter.

This study selected the case of SBS because it is the first and only broadcasting network in Korea to have introduced a digital TV news production system. According to their in-house documents, KBS and MBC, the largest and second-largest TV broadcasting companies in Korea, are still at the stage of preparation for digitalising their news production systems. Both of these public service networks expect that they will be able to start digitalisation of their news production systems around 2010.

4.1 The adoption process of SBS

In Korea, although people consider their country a world leader in digital technology, the digitalisation of the TV newsroom was pre-empted by European countries. It was in June 2004 when SBS introduced a digital TV news production system to realise its ambition to become a leader of digital broadcasting in Korea. Prior to Korea, Taiwan began TV news digitalisation in early 2000 (Lin, 2007). FTV officially announced its successful adoption of the first digital TV news production system in Taiwan in July 2003.

SBS's digital project was led by Yoon Se-young, the founder and chairman of the SBS media group. In the process of founding the broadcasting company, Yoon took advantage of the neo-liberal trend, which was developed in the Thatcher and Reagan era of the 1980s. When the Korean government announced the deregulation of the

television broadcasting industry, he dealt with influential politicians to win television licences. In this sense, he is analogous to another great figure of the world of journalism, Rupert Murdoch.

SBS's digitalisation project can be understood as a strategy to cope with the wave of deregulation, which was realised in Korea. In this sense, Yoon Se-young, as chairman of SBS, seemed to acknowledge the importance of advance preparation, as Negrine (1994, p. 99) emphasised that to take advantage of rapidly developing technology, both media organisations and policy makers should plan in advance and plan for radical change. However, planning ahead of time is not straightforward in practice due to the heavy initial investment and risk involved. Based on their survey, Aquino et al. (2002) noted that TV and newspaper industry executives "find it difficult to plan in advance to overcome this identity crisis and to reinvent the business" (p. 69), although they acknowledged they are facing a crisis – of circulation, viewership, advertising and focus.

Actually, with the ratification of the Media Law in the Korean National Assembly in June 2009, which lifted the decades-old ban on newspapers and large firms operating broadcasting companies, and set generous ceilings for their ownership of television networks, SBS is facing a crisis. Since then, it has been watched with keen interest by those concerned, such as the broadcasting industry, scholars and the government authority to discover whether the investment of SBS in the digitalisation of the production of programmes, including news, entertainment and sports, is beginning to have an effect in overcoming this crisis. It is vital for the survival of SBS to be able to beat off challenges from its rivals.

4.1.1 The embryonic stage of the project: two research teams and a project team

In February 2002, SBS, the only commercial network broadcaster in Korea, made a plan to be a pioneer of TV news digitalisation among Korean broadcasting companies. In December 2003, SBS began to move into new headquarters and decided that while moving it would replace its out of date analogue news production equipment with a new digital system, which would provide SBS with both operational efficiencies and a platform for introducing new services in the future.

In February 2002, the owner and chairman of SBS media group, Yoon Se-young, was greatly impressed by demonstrations of the advanced news production system of Phoenix TV in Hong Kong and CCTV in Beijing, which had already implemented a digital broadcasting environment for programme production and transmission, including the nonlinear editing (NLE) system provided by China's Dayang.

> The SBS delegation was overwhelmed by the digital programme production system, which employed network-based technology instead of tape-based technology. The new technical trends shocked them deeply and made them realise that the world was changing rapidly. Immediately after their return home, Yoon ordered the then CEO and president, Song Do-gyun, to investigate promptly the global trend of broadcast technology and report to him on it (IT1, interviewed on 26 July 2007).

On the instruction of the most influential person in the SBS media group, CEO Song dispatched teams to Europe and the USA in spring 2002, when he found the TV advertising market in Korea had recovered. At first in April 2002, the Europe team, headed by the then vice CEO of SBS, Ahn Kuk-chung, visited Telemadrid in Spain, TF1 in France and YLE in Sweden. Regarding the selection of destinations, they mainly visited particular sites through the agency of the broadcasting system providers like Sony and Thomson. This led them to exclude important broadcasting companies like the BBC because the system providers recommended their reference sites where they sold their products. Consequently, the SBS European team had no choice but to go to specific places, such as Telemadrid, a Spanish broadcasting company with which Sony had established trade relations, and YLE, a Finnish broadcaster, where Thomson provided the systems and broadcasting equipment. On the other hand, the USA team, headed by then the Vice President in charge of News and Sports Headquarters, Song Suk-hyung, visited networks including ABC, NBC, CBS and KMEX in Los Angeles from 20 to 29 May 2002.

> At that time, no members of the two observation groups knew what the digital news production system meant, and even when the project team was established, few people grasped the meaning of the digital system (IT1, interviewed by email on 7 September 2009).

In late May 2002, the report of the European team was written, and in early June, the USA team wrote their report. When the reports of the two teams were published in June, Lee Sun-myung, then in charge of News Strategy and Coordination, submitted a report on behalf of both teams to Yoon. Finding that most major broadcasting companies in Europe and the USA had already implemented or were implementing a digital TV news production system, Yoon ordered Lee to "Immediately initiate the project of the news digital system" and appointed him on the spot to be the leader of the project (IT1, interviewed on 12 August 2007).

For the smooth implementation, Lee established a project team "the NDS Taskforce Team" on 2 July 2002. As shown in Table 4.1, the project team, which consisted of six members from various departments related to the newsroom digitalisation, started to search for information on subjects such as standards and equipment for digital TV news technologies.

Table 4.1 Members of the SBS Newsroom Digitalisation Project team

No	Name	Profession	Title	Responsibility
1	Lee Sun-myung	Editor, Journalist	Head of the project on the digitalisation of SBS newsroom	Planning, operation and management
2	Kim Kang-suk*	Deputy Editor, Journalist	Liaison officer	Coordination between the journalists and the team members
3	Cho Yong-dae	Manager**	Technical staff	Representing SBS technical staff
4	Park Young-hoe	Manager	IT staff	IT network specialist
5	Ha Tae-ryong	Manager	SBS technology Institute	SBS technology researcher
6	Han Sung-sae	Manager	SBS technology Institute	SBS technology researcher
7	Kim Byung-jik	Picture editor	department of picture editing	Representing SBS picture editors

* The researcher of this study played this part in the project team from December 2002 to June 2003. Kim Kang-suk was his successor in the post of Liaison Officer (see Appendix 7).
** A manager is a subordinate under his/her "Director" in a non-journalistic department.

The seven-member project team, who were dubbed "The Magnificent Seven" derived from the title of western movie starring Yul Brynner and Steve McQueen, chose to

appoint IBM as the system integrator in March 2003. In addition, they selected the Korean company KONAN, a Media Asset Management (MAM) solution vendor, as the main software provider.

In June 2003, SBS officially decided to introduce a digital news production system to its newsrooms to catch up with the global trend of newsroom digitalisation. This would replace obsolete analogue newsrooms with state-of-the-art digital newsrooms. The then-executives of SBS were hopeful that the changes they sought to introduce would lead to higher journalistic quality, cross-departmental processing of complex topics, and optimised newsroom workflow and professional content planning.

Furthermore, they expected that SBS journalists would perform multimedia journalism (the integrated presentation of a news story package through different media, such as radio, television, website, DMB, i.e., a hand-held TV, and IPTV) and convergence (combination of technologies, products, staff and geography among the previously distinct provinces of print, television and online media) in the future (IT1, interviewed on 26 July 2007).

In particular, SBS chairman Yoon asked the project team to focus on cost-cutting and increasing the intensity of labour by not allowing journalists to be paid when they were not working. An effort to realise the chairman's intentions of cost cutting led to an attempt to introduce the desk-sharing system which made journalists share several large tables for common use and removed journalists' own desks. In addition, to increase the productivity of journalists, the project team developed a special system which automatically counted each journalist's total number of news stories per month. However, this automatic counting system was abandoned just before it was employed due to the serious objections of SBS journalists.

4.1.2 Three major goals and four minor goals

In its early stage, the SBS project team named the new system 'the SBS News Digital System' (hereafter referred to as NDS). Originally, the NDS project had three major and four minor goals, as shown in Table 4.2 and Table 4.3. Firstly, the introduction of the newsroom digitalisation, of course the most important goal among all the goals,

was to digitalise the news production processes such as news covering (writing a news story and shooting pictures for it), news picture editing, news transmitting, storage of materials, and to create a 'tapeless' news production process. Secondly, the adoption of the multi-skilling process was a second major goal, which tried to make journalists do simple edits of both pictures and subtitles for their own news stores. Finally, newsroom convergence was the third major goal. To achieve this goal, the project team demanded journalists to contribute far more significantly to the SBS news web site, DMB (Digital Multimedia Broadcasting, a handheld TV), and other news outlets.

Although the minor goals were less important than the major ones, nevertheless, they had significant implications for the NDS project, because they most directly caused fierce resistance to the project per se from journalists. Among four minor goals, the first one was redefining the job descriptions of editors and deputy editors. Traditionally, editors were responsible for directing journalists' newsgathering, and polishing and improving their news stories. By contrast, the newly introduced job descriptions asked editors to concentrate just on directing newsgathering, and transferred the job of polishing news stories to deputy editors. This change was promoted by the project team, who thought the editors should spend all their energies on directing journalists who were gathering news events in the field.

The second minor goal was establishing and operating the Command Room, which was directly related to redefining the job descriptions stated above, because the room was introduced for editors who were placed together to direct newsgathering, monitoring the situation through the digital system specially designed for this purpose. The third goal was to make journalists share several large round tables for five or more journalists, and this measure was viewed by SBS journalists as one of the most disappointing ones taken by the project team (see Tables 4.11, 4.12, 4.13, 4.14).

The last minor goal was to introduce a GPS system to locate news vehicles moving around the news event fields. The Global Positioning System (GPS) is a US satellite-based global navigation system, which provides reliable positioning, navigation, and timing services. This idea was abandoned within several weeks because both camera crews and drivers, who had always worked together, made vigorous protests to the

project team, insisting that this measure threatened to infringe the autonomy of news staff.

Table 4.2 Three major goals of the NDS project

Goals	Plan		
	Areas	Before	After
(1) Newsroom Digitalisation	Equipment	analogue	digital system
	Organisational innovation	see Table 4.3	see Table 4.3
(2) Multi-skilling Practices	Simple picture editing	no editing by journalists	simple editing by journalists
	Subtitles	journalists are not responsible for subtitles	journalists edit and insert their own subtitles
(3) Newsroom Convergence	Web news	limited contribution	more significant contribution
	DMB (digital multimedia broadcasting)	limited contribution	journalists write news stories for the SBS news website

Table 4.3 Four minor goals for organisational innovation

Goal	Plan		
	Position	Old job roles	New job roles
(1) Job descriptions	Editor	Responsible for directing newsgathering & polishing news stories Not responsible for directing journalists for newsgathering	Responsible for directing journalists for newsgathering. Not responsible for: polishing news stories
	Deputy Editor	Responsible for: assisting editor in polishing news stories Not responsible for: directing newsgathering	Responsible for: polishing news stories Not responsible for: directing newsgathering
(2) Command Room	Chief Editor	Work at their own desks in the newsroom	Work together in Command Room
(3) Information Support Centre	Reporter	Occupy own desks	share tables
(4) GPS	Reporter	Cannot locate news vehicles	Can locate news vehicles

4.1.3 The timetable of the project

The first SBS digital news programme was broadcast in February 2004 and all bulletins were on the air with the new system by June 2004. Therefore, the total project duration was two years exactly. In the early stages, negative views on the NDS project prevailed because a considerable number of journalists, including even editors and deputy editors, thought that they were being used as guinea pigs in an experimental and risky project. In other words, they thought it was the broadcasting companies larger than SBS, such as KBS and MBC, that should have been the pioneers of such a risky project.

In August 2003, 149 news workers underwent the preliminary course for the digital transition, and in October, they were given training in the digital news production system. From January 2004, SBS journalists were provided with advanced training for particular roles such as digital picture editing and digital voice recording. In April 2004, SBS journalists were given the final training in the actual workflow. From August 2003 to April 2004, it took eight months to assimilate the new technology and its usage in the news department. Finally, in June 2004, SBS broadcast all newscasts via the digital production and transmission system.

The innovations, which SBS adopted, included the nonlinear editing system (provided by Thomson Grass Valley), the digital broadcasting system (implemented by D2Net), the video ingest and archive system (installed by Konan) and the NRCS (newsroom computer system) for writing and editing news stories (CIS Technology). The adoption process of SBS is divided into the following sub-processes as shown in Table 4.4.

Table 4.4 Timetable of adoption of Digital TV System in SBS

Time	Events
September 2001	SBS owner and chairman, Yoon instructed Song Do-gyun, the then CEO, to introduce the digital TV news digital system
March–May 2002	Two groups of inspectors visited European and US broadcasting companies respectively
2 July 2002	The project team on TV news digitalisation was organised
July-August 2002	Surveyed existing digital TV news production system
30 December 2002	Selected IBM as the system integrator
31 March 2003	Signed a contract with IBM
1 September 2003	NLE (nonlinear editing) setting up and training

December	2003	Completed SBS news production system integration
12 February	2004	Broadcast the first news programme (4 p.m. news) digitally
25 February	2004	Moved to the Mok-dong SBS headquarters
21 June	2004	Full-scale digital broadcasting of all news bulletins
January	2005	Abandonment of organisational innovation - Job descriptions of editors and deputy editors returned to their former roles - The Command Room was abandoned - Newly designed newsroom returned to the former layout
February	2005	Project team was dissolved - The multimedia plan was abandoned - The newsroom convergence plan was postponed without a time limit

A description of the process of the BBC's newsroom digitalisation would be helpful to enhance understanding of how SBS implemented their digital system. Jupiter is "an integrated digital newsroom system" introduced at the BBC Television Centre (TVC). Until that point, each newsroom in TVC had its own separate infrastructure across national television news programming, BBC News 24 and BBC World (EBU report (b), 2005, p. 7). Table 4.5 shows the steps of the implementation of the BBC's Jupiter project.

Table 4.5 The BBC's Jupiter Project

Stages	Steps
Agenda-setting	• To deal with the increased volume of news material, in terms of hours of input/output and format: o 300 hours of new video and 200 hours of new audio material arrive in the BBC News Centre every 24 hours o 500 new video assets are created in BBC News 24 and BBC World every day o 300 new text assets, 90 new video assets and 60 new audio assets are created in BBC News Online every day • To deal with the need to re-version and re-purpose content across multiple sites.
Matching	2000: Experimental pilot project, with journalists from News and Sport across the BBC. A study was conducted to find out what journalists and newsroom users really wanted: primarily the ability to view media at their desktops; have access to and share material quickly across production teams while being able to view metadata about the media (information on rights, usage, embargoes, locations, etc); search and select from current and archive material; and see the media life cycle through editing, transmission and archive. • 2001: Invitation to tender for storage and editing.
Redefinition/ restructuring	• BBC Technology Ltd (BBCT, now Siemens Business Services Media with its Colledia product) takes on the supply of the media asset management system and the role of lead integrator. • September 2002: Quantel wins the contract for storage and editing.
Clarifying	Both Quantel and former BBCT had significant development work to do to deliver their solutions. Integration between the two solutions was also not straightforward.

.	• The end of 2004–the first quarter of 2005: Acceptance testing conducted as a series of releases from both suppliers, into a "live piloting" environment. Content is going to air, end-to-end, in News 24, but alongside the old operation on Omnibus automation system and tape editing.
Routinising	• Summer 2005: Seeking to truly "go live", though with *lots still to deliver in later phases* (emphasis added).

Source: EBU report-b (2005, p. 7)

As shown above, although the BBC project took over five years, even then it still had not completed the Jupiter project because it left "lots still to deliver in later phases" (EBU report-b, 2005, p. 7) even at the end of the project, the routinising stage. This indicates the difficulties of newsroom digitalisation, and it shows how the implementation by the SBS project team was a big rush.

The implementation of the news digital system (NDS) was a dramatic transition from an analogue, tape-based production system to a digital, tapeless, network-based one. Unfortunately, NDS (the News Digital System) crashed frequently during the first year, due to the inappropriate system plan. System instabilities caused tension between the implementers (the NDS project team) and users (the news department, in particular, News Editing Units). Later, it took almost four years to do the debugging, troubleshooting and adjusting of the hardware, software and workflow to NDS, before the news production system reached reliable performance. The IT department made many efforts to stabilise the system as soon as possible. In late August 2005, the vendor (D2Net, a Korean company which provided the automated transmitting system) sent several specialists to observe the performance of the NDS system.

For the first time in Korea, SBS completed TV news digitalisation of all areas including text, camera shooting, picture editing, broadcasting, and data storage. Thus, SBS has the largest scope of implementation among the Korean network broadcasting companies and dozens of local broadcasting companies. This chapter analyses the process of SBS TV news digitalisation in terms of managerial standing based on Rogers' organisational innovation theory.

4.2 The innovation process at the organisational level

Based on the framework of the organisational innovation process (see Figure 2.1), this chapter examines the process of innovation in the SBS newsroom in terms of the organisation. SBS journalists regard TV newsroom digitalisation as synonymous with a tapeless and server-based news production process; however, it is more than that. SBS's innovation had one of the largest scopes of implementation in the world when it was launched in 2004. SBS integrated different platforms into one single TV digital system and consequently its technological track is multidirectional and complex.

Although IBM, the selected system integrator for digital broadcasting, helped SBS to develop a prototype for an integrated digital TV news production system, its technical stability remained more problematic. Overall, implementing such a self-developed digital TV system was intrinsically difficult. As of August 2008, when the researcher revisited the research site, SBS engineers were still making great efforts to complete troubleshooting, debugging and technical adjustments. Table 4.6 shows how SBS adopted the digital news production system.

Table 4.6 The innovation processes in terms of the organisation

Stages	Event		Time
(1) Agenda Setting	President gave an order for the newsroom digitalisation		September 2001
	A preparatory committee was established		October 2001
	Final decision on the digitalisation of TV news production was made		May 2002
(2) Matching	Organising a project team		July 2002
(3) Redefinition/ Restructuring	IBM was selected as system integrator		30 December 2002
	Full-scale digital broadcasting		21 June 2004
(4) Clarifying	System crashes were solved		On-going as of mid 2008
	Testing digital cameras		2008
(5) Routinising	Elimination of all analogue equipment		Late 2004
(Discontinued)	Multimedia	Simple editing	Mid 2005 (within less than one year after the first digital broadcast)
		Subtitle	Same as above
	Convergence	Web news	Same as above
	Organisational change	Job description	Same as above
		Command Room	Same as above
		Information Room	Same as above
		GPS system	Same as above

4.2.1 Agenda-setting: the first adopter of the digital news production system

As shown in chapter 2, agenda-setting occurs when a general organisational problem is defined that creates a perceived need for an innovation (Rogers, 2003, p. 422). In other words, agenda setting is a process in which a specific problem is identified and a need to solve it is raised (Soroka and Jacovi, 2004, p. 2). At this stage, the members of an organisation define and prioritise their needs and the general organisational problems, and search for potential innovations to meet them.

For more than thirteen years, from its establishment in November 1990 to February 2004, when it moved to new headquarters, SBS rented its premises from the Tae-young Construction Company, which was a separate corporation, though owned by the SBS owner and chairman, Yoon. SBS decided to construct new premises at Mok-dong, in the western part of Seoul, which would accommodate SBS TV News headquarters and offices for the Radio and Sports departments. When SBS looked for the infrastructure and equipment to build its new headquarters, the broadcasting industry was on the point of being shaped by emerging digital technology.

> SBS had come to a most important turning point... The SBS industry was about to change. No one knew what the new thing would be like. The existing solutions had become obsolete already. Trying new things had to run the risk. However, if not trying, we were fated to encounter more enormous difficulties. Coincidentally, most SBS broadcasting equipment had to be replaced due to its obsolescence. Although this triggered the idea to establish digital SBS news headquarters, 100 per cent digitalisation was treated as an outrageous idea by the majority in SBS (IT1, interviewed on 26 July 2007).

With a digital dream, the project leaders conducted an extensive survey of products and made on-site observations of overseas stations. What they searched for was an open system with cost-effectiveness and high-quality performance. Unfortunately, they did not find any system that met their needs.

> In the initial stage, SBS management gave priority to cost-saving. In particular, the ideal of the then CEO, Song Do-gyun, was to look for the highest value of cost to performance.

That is, the lowest cost and highest performance. By contrast, I thought that the fundamental innovation of the SBS news production system should take precedence before everything else (IT1, interviewed on 26 July 2007).

Before digitalisation, most journalists of the SBS newsroom objected to the SBS project. They felt it was an impractical idea. Certain parties wrote anonymous letters to the SBS owner and chairman, Yoon, or the inspection department to intrigue against me. In addition, competitors who failed to make successful bids slandered me. Nevertheless, Chairman Yoon threw his full support behind me. He declared in the meetings of the managerial staff that 'we had the right course and should push ahead with the SBS project despite the opposition' (IT1, interviewed on 26 July 2007).

The inner circle of the decision-making consisted of three members: (1) the Vice-president of News and Sports Headquarters, Kim Jin-won, (2) the Editor-in-Chief, Woo Won-gil and (3) the leader of the SBS project, Head of Project Lee Sun-myung. Another Editor, Choi Gum-rak, led a think tank to improve the quality of what was required to show the reformed news and moving to the new headquarters as a motivation. Head of Project Lee was a key member who did both planning and execution of the newsroom innovation project which was promoted taking the opportunity of moving into the new building (SR3, interviewed on 10 July 2007).

The head of the project, Lee Sun-myung, who took heavy responsibility, was ambitious to implement this job very successfully.

Initially, I thought that the more open the system was, the easier it would be to integrate new technology into our future system. There were two objectives in selecting the new system. One was an open system that was not restricted to specific formats or brands; another was choosing components that were available in the market. Besides, the interface should be designed on the basis of users' experiences and needs (IT1, interviewed on 26 July 2007).

The agenda-setting period was critical, in that at this stage SBS made up its mind to walk its own way. Later, it decided to integrate its unique system by itself. Top management's vision and support was the main driver to make this difficult dream come true. Lee Sun-myung, an editor and chief secretary to the SBS owner and chairman, Yoon Se-young, was selected to implement the digital plan. Most

employees who were aware of this brave dream had doubts as to its feasibility. After making on-site inspections of TV stations in Spain, France, Sweden and the US, no existing system was found that suited their needs of low cost and high performance. With top management support, SBS IT managers decided to develop their own integrated system.

In the agenda-setting sub-process, managers identify and prioritise organisational needs and problems and search for the potential innovations to solve problems set by the agenda. As mentioned above, the idea of SBS news digitalisation was initiated by the top-down decision of the Chairman, Yoon Se-young, who regarded digital SBS news technology as an opportunity to lead the Korean broadcasting industry. Seeing the inevitable digital trend, in 2002 the Chairman decided SBS would be the first adopter of a digital news production system in Korea. Consequently, the SBS project team did not need to make efforts to identify the organisation's needs. Furthermore, SBS did not conduct any survey of journalists' attitudes to the adoption by SBS.

To achieve the dream of being the leading broadcaster to support content for multiple channels simultaneously, and to replace obsolete analogue equipment (IT1, interviewed on 12 August 2007), in 2002, SBS established the SBS project team, which comprised seven members from the News and the engineering departments. With his broad visions, Yoon Se-young aimed to position SBS as a digital leader in the Korean broadcasting industry. He developed many channels for its terrestrial broadcasting, its SBS service and three cable channels themed on golf, other sports and drama, with no newscasts. He found the corporation would need to make an enormous investment in hardware infrastructure to be a leader in digital broadcasting.

> Chairman Yoon told me that SBS should lead the Korean broadcasting industry. He said he expected significant risk, but he was ready to run it (IT1, interviewed on 12 August 2007).

According to Lee (2004a, p. 12), SBS had an urgent need to digitalise its system because the existing broadcasting equipment that was installed in 1990 when SBS was launched had become obsolete. Furthermore, SBS was going to move its headquarters

from Yoido to Mok-dong. It was a good opportunity to transform its analogue news production system into a digital one.

As some news stories were broadcast through different media at the same time, such as DMB (Digital Multimedia Broadcasting, a hand-held TV), newsroom staff had to make duplicates, compete for tapes and run back and forth. It caused inconvenience, chaos and conflicts. Some of the SBS staff I later interviewed told me they favoured the proposal to adopt digital SBS news technology because the new production system would allow news workers to share ingested footage or news clips simultaneously and thus this serious organisational problem could be solved.

In June 2002, receiving the final report about the global trend of newsroom digitalisation from Lee Sun-myung, Chairman Yoon immediately decided to adopt a digital news production system for SBS, for two main reasons: Firstly, digitalisation was regarded as an inevitable trend in the global news industry, and secondly, "SBS positions itself to be a leading content aggregator and content provider" (IT1, interviewed on 12 August 2007) and SBS had to be the first adopter of the digital news production system to lead the trend. Despite high risk and uncertainty, the first mover in this field can make incremental gains in advertising revenue generated by the digital production system.

Additional Innovations

Lee Sun-myung, who was appointed as head of the newsroom digitalisation project team in June 2002, said that SBS was so ambitious that he could not limit the goals of the project just to newsroom digitalisation. He thought the process of digitalisation gave the best opportunity to introduce fundamental innovations in newsroom organisation and work practices. Consequently, Lee, who had been entrusted with full powers by Yoon as the owner and chairman of SBS Media Group, formed a scheme for the overall newsroom innovation. Table 4.7 shows the "Principles of operating the SBS digital newsroom" from the in-house documents which were provided by Lee.

Table 4.7 Principles of News and Sports Headquarters

Problems	→ New principles to innovate
Position oriented	→ Role oriented
Units centred	→ Collaboration centred
Closed information management	→ Integrated information management
Monopoly of work space	→ Sharing work space
Single task	→ Multitask

Source: Lee (2004b), "The SBS Digital Newsroom Plans" (p. 2)

According to these principles, Lee developed policies on the newsroom innovation and its planned operation (Table 4.8).

Table 4.8 Newsroom Operation Policies

Problems	→ New policies to innovate
Limited power of news Editing Units 1&2	→ Enhance the power of Editing Units 1&2
Limited function of the editorial meeting	→ Standing editorial meeting system
No cooperation among units	→ Integrated operation of units
Ineffective in big breaking news	→ Establish the Command Room
Lack of support for newsgathering	→ Establish the Information Support Centre
Inefficient information gathering	→ Enhance the information gathering
Lack of journalists' specialty	→ Improve journalists' specialisation

Source: Lee (2004b), "The SBS Digital Newsroom Plans" (p. 3)

Noting that "the major broadcasting companies in the world are now carrying out a newsroom revolution", Lee suggested three factors by which the change was produced: (1) digital technology, (2) media convergence and (3) survival strategies in the age of limitless competition. Furthermore, he maintained that a synergy effect could be produced by integrating three factors: (1) information, (2) human resources and (3) space. Moreover, he was planning to introduce multimedia news in the future (the integrated presentation of a news story package through different media, such as radio, television, website and mobile television) and convergence (cooperation and collaboration between formerly distinct media newsrooms).

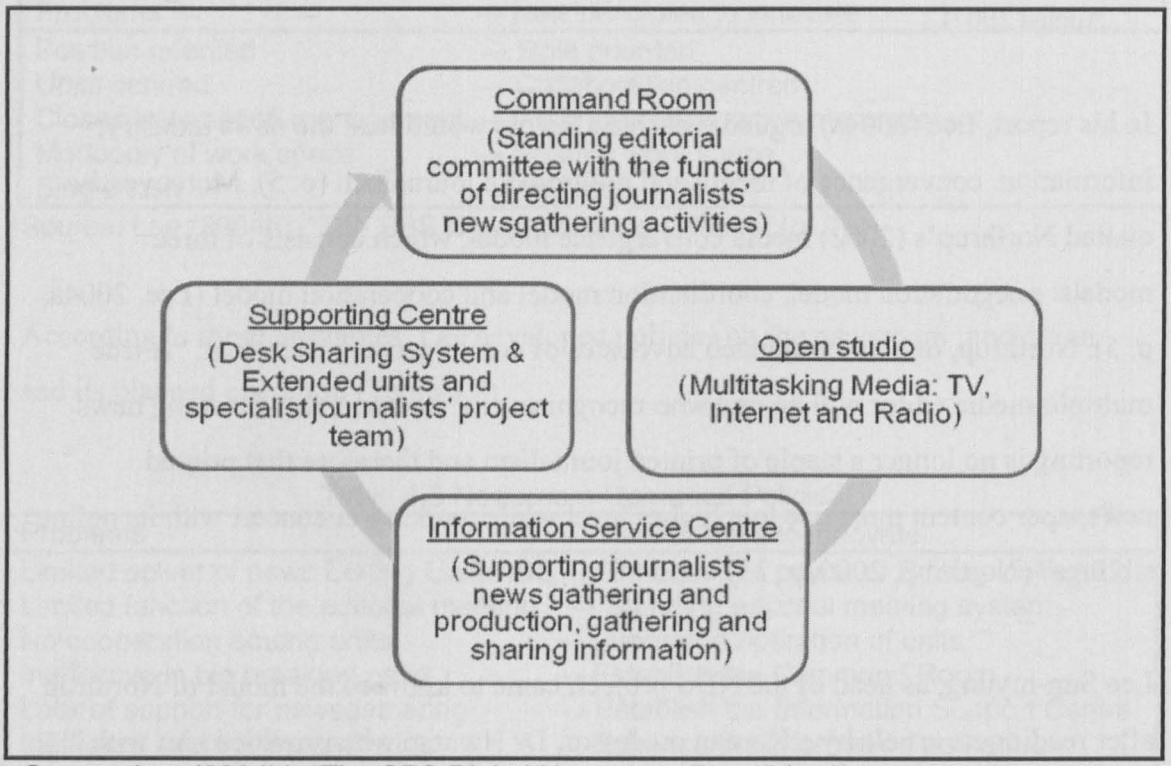
> Media organisations have undergone a revolution in the news production system across the world in recent years. I reported to the SBS management in January 2004 that digital technology and media convergence revolutionising the newsrooms is a global trend, subsequently, we in SBS should introduce multimedia journalism. At that time, I suggested to the board of directors a model which was developed by Kerry Northrup, director of the world's leading association for newspaper and media technology, IFRA, which stands for INCA (International Newspaper Colour Association)-FIEJ (Fédération

Internationale des Editeurs de Journaux) Research Association (IT1, interviewed on 26 August 2007).

In his report, Lee (2004a) argued that three factors would lead the news industry; information, convergence of media and multimedia journalism (p. 5). Moreover, he quoted Northrup's (2002) media convergence model, which consists of three models: ; negotiation model, coordination model and cooperation model (Lee, 2004a, p. 5). Northrup, one of the staunch advocates of convergence, insists that: "A true multiple-media editor will be one who recognises, for instance, that breaking news reporting is no longer a staple of printed journalism and therefore that printed newspaper content must rise to a higher level while working in concert with its online siblings" (Northrup, 2000, p. 33).

Lee Sun-myung, as head of the NDS project, came to know of the model of Northrup after reading an article by a Korean professor, Dr Hwang, who provided him with suggestions as requested. Hwang was one of a few researchers who were interested in newsroom convergence and wrote about the topic of newsroom innovation focused on newsroom convergence and SBS journalism. However, Lee himself, as he confessed, did not have a thorough knowledge of newsroom convergence. Nevertheless, with this new theoretical background, Lee shaped his idea of the SBS multitask newsroom illustrated in Figure 4.1.

Figure 4.1 Multitask Newsrooms of NDS (the SBS News Digital System)



Source: Lee (2004b), "The SBS Digital Newsroom Plans" (p. 6)

In accordance with these principles and policies, Lee developed his ideal of newsroom innovation as follows:

1) Changing job descriptions of editors. It meant their main job changed from improving journalists' news stories to just allocating the work to journalists and supervising their jobs. Polishing the stories was allocated to the deputy editors.
2) Introducing the Command Room (similar to the room for the commanding officers in police or military headquarters) and making editors sit together in the room to direct and supervise journalists' newsgathering through the situation board and mobile phones.
3) Establishing the "Information Support Centre" and removing journalists' own desks. Accordingly, SBS journalists had to share several large tables for common use.

In particular, the layout of the newsroom planned by Lee met with considerable resistance from SBS journalists, who faced having their own desks taken away. More

importantly, editors also complained about the inconvenience of having to work gathered together in the Command Room. As briefly described in chapter 1, the background of introducing the Command Room can be explained by the ideas of Lee who led this innovation. He thought he could change some of the undesirable practices of Korean journalism.

Lee's idea seemed impossible to realise in the context of the current Korean society. As might have been expected, he failed to change the editors' working practices. He believed that when editors gathered in one space, they would hold each other in check. However, in practice, whenever they received mobile phone calls from executives of companies or government officials who were news sources for the journalists under their supervision, they stealthily went out of the Command Room. As usual, editors were frequently invited to free dinners, and every weekend, they went golfing usually with executives of companies or high officials of newsbeats who paid for journalists in full (see Section 2.4.4 Korean journalism culture).

The new layout that was proposed is shown in Table 4.9.

Table 4.9 The Arrangement Plan of the SBS newsroom

Position	Room	Arrangement and numbers of staff
Top-level leaders (2 people)	1	Vice President of the headquarters
	1	Editor-in-Chief
News Commentators (4)	1 on 3rd floor	Head of News Commentators Office (1) News Commentators (3)
News Coordinator (1) Deputy Editor-in-Chief	Newsroom	Editor (1) Project Team for General Election (3)
Command Room (7)	1	News Editing 1/ News Editing 2, Political News/ Economic News General News/ National/ International News
Open Studio* (55)	on 4th floor	News Editing, 1, 2 (15)/ Internet News & Radio News (17), International News (18) Weather (5)
Information Support Centre (65)	Newsroom	Tables (for 24 journalists), Round tables (for 16), Desks (9), Sofas (14), PCs
Newsroom (87)	Newsroom	Newsgathering (30), Free Desks (32), Feature News (25)
Administration staff	Newsroom	Administration Unit (6), staff (10)
Total (234)		Total 234 people

Source: Lee (2004b), "The SBS Digital Newsroom Plans" (p. 7)

* SBS had built a completely new studio called the "Open Studio" for the newsroom digitalisation project on the fourth floor of the new Mok-dong SBS headquarters, which opened on 1 March 2004.

However, as most journalists agreed (see Tables 4.11-4.14, 4.19-4.21), Lee's plan was, by and large, too ambitious to be realised. When we compare the goals of SBS's project with the simple goals of digitalisation projects by broadcasting companies in other countries, we can see how his idea was too extensive. Table 4.10 shows the project goals of SBS and of four European broadcasting companies.

Table 4.10 Project goals of newsroom digitalisation

TV Stations	Project goals
BBC (UK)	- To deal with the increased volume of news material, in terms of hours of input/output and format: (details in Table 4.3) - To deal with the need to re-version and re-purpose content across multiple sites (EBU report-b, 2005, p. 7)
France 2	- To digitalise the production process of a TV newscast, to move from a tape-based system to a file-based system (EBU report-a, 2005, p. 2)
DR (Denmark)	- Same technical platform for News, Sports, Children, Drama, Documentary, Current affairs, etc. - Content sharing between TV, Radio, web and mobiles - Complete change of workflow in production and archiving - 100% non-proprietary hardware and software - Built on standard IT components (EBU report-c, 2005, p. 5)
SBS (see Table 4.2 and Table 4.3)	- Newsroom digitalisation - Multi-skilling practices - Newsroom convergence - Job descriptions - Command Room - Information Support Centre - GPS

Sources: EBU report-a (2005), EBU report-b (2005), EBU report-c (2005) and Lee (2004b), "The SBS Digital Newsroom Plans" (pp. 2-6)

4.2.2 Matching: the server-based, tapeless news production system

Rogers (2003) defines matching as "the stage in the innovation process at which a problem from the organisation's agenda fits an innovation, and this match is planned and designed" (p. 423). Similarly, Lawson-Borders (2003) refers to the matching stage as "fitting a problem from the organisation's agenda with an innovation" (p. 93). In addition, Soroka and Jacovi (2004) view matching as the process in which a specific innovation solves the problem from the previous step (p. 2).

In particular, attempting to determine the practicability of the innovation in resolving the organisation's problems, the organisation's members try to predict the advantages and the predicaments that the innovation will meet when it is implemented (Rogers, 2003). Therefore, the matching decision is "the watershed in the innovation process between initiation and implementation" (Rogers, 2003, p. 424).

Since SBS was a commercial broadcaster which operated on advertising revenue, cost saving was always the most important factor for adoption. Affordable products with open-coded compatibility were also important considerations (IT1, interviewed on 12 August 2007). Integration made the matching work very complicated, as the digital team was busy not only testing the functionalities of various technologies, but also experimenting to put potential products together to check their compatibility. In the matching sub-process, the deputy editor, Kim Kang-suk, from the news department was selected to express journalists' concerns and opinions, as well as to communicate and negotiate with technicians and vendors.

> We judged applicants for contracts according to the evaluation of technical stability, compatibility, user-friendliness, maintenance, affordability and complementariness (IT1, interviewed on 12th August 2007).

The SBS news digital system (NDS) had five criteria for evaluating a bid: (IT1, interviewed on 2 August 2007):

(1) Tapeless production and editing
(2) Server-based editing with direct server playout
(3) Nearly paperless production
(4) Concurrent access to all video material by all staff members
(5) Browse-quality rough-cut editing on journalists' desktop PCs

After evaluating the limited choices available in the market in 2002, the project team strongly recommended IBM, the global leader in the broadcast industry, as the system integrator (SI). They justified this recommendation on the grounds that IBM had worked with numerous broadcasting companies worldwide including CNN, the

Australian Broadcast Corporation and Swedish Television, each of which had gone digital to preserve their assets and to position themselves for the future.

Subsequently, the project team arranged the rollout schedule, including time for system setup, training, and evaluation. Managers and programme editors in the users' departments (the news department and the engineering department) made their mediation plans accordingly to meet the deadlines. There was not much persuasion or promotion among editors or users in the news and engineering departments, as it was an order from the top, from the Chairman Yoon, the owner of the SBS media group, who has absolute power. What the project team had to do was to follow orders, obtain the appropriate technology and then make it work. When the project team selected the broadcasting system, they insisted on a tapeless digital news production system, without tapes or VTR as backups. Finally, the project team constructed a prototype that integrated the digital news production system, nonlinear editing system and digital storage.

4.2.3 Redefining/Restructuring: most goals were relinquished

According to Rogers (2003), redefining/restructuring occurs when the innovation is reinvented to accommodate the organisation's needs and structure more closely, and when the organisation's structure is modified to fit with the innovation. In the same context, Soroka and Jacovi (2004) think that redefining deals with initial implementation of the innovation and redefining it to fit the specific organisation (p. 2). One manager said that the additional innovations such as the Command Room and removing journalists' own desks gave journalists an unfavourable impression of the whole NDS project. In particular, journalists were disillusioned when the project team announced the overall plan of the NDS project including the removal of journalists' own desks at the first hour of the education class in June 2003.

The majority of respondents (84%) disagreed with the statement that "Removing SBS journalists' own desks and making reporters share a table was a realistic idea." This might be interpreted as showing that in the Korean culture their desks and office chairs signify social status (Table 4.11).

Table 4.11 Removing SBS journalists' own desks and making reporters share a table was a realistic idea.

Agree	Neutral	Disagree	Strongly disagree	Total
7	13	62	43	125

The responses differed little in terms of age, more than four-fifths of those under 40 (85%) and those 40 or over (83.1%) disagreed with the statement (Table 4.12).

Table 4.12 Removing SBS journalists' own desks and making reporters share a table was a realistic idea.

Age	Agree	Neutral	Disagree	Strongly disagree	Total
Under 40	3	6	29	22	60
40 or over	4	7	33	21	65
Total	7	13	62	43	125

With regard to the respondent's position, almost three-quarters of sub-deputy and deputy editors (72.9%), and more than three-quarters of ordinary reporters (84%) disagreed with the statement. On the other hand, less than two-thirds of senior editors (62.5%) disagreed with the statement (Table 4.13).

Table 4.13 Removing SBS journalists' own desks and making reporters share a table was a realistic idea.

Position	Agree	Neutral	Disagree	Strongly disagree	Total
Reporters	2	6	22	20	50
Sub-Deputy & Deputy Editors	3	3	34	19	59
Senior Editors	2	4	6	4	16
Total	7	13	62	43	125

With regard to the period of employment, almost all of the journalists who had worked for from 11 to 15 years (93.1%), four-fifths who had worked for 10 years or less (80%), and more than three-quarters of those who had worked for 16 years or more (78.2%) disagreed with the statement (Table 4.14).

Table 4.14 Removing SBS journalists' own desks and making reporters share a table was a realistic idea.

Period of employment	Agree	Neutral	Disagree	Strongly disagree	Total
10 years or fewer	2	5	18	10	35
11 to 15 years	1	2	22	19	44
16 years & more	4	6	22	14	46
Total	7	13	62	43	125

Innovations sometimes cause uncertainty in an organisation, or a painful condition that may make people mount resistance to new technology. SBS's project is a typical case in which uncertainty was one reason for the serious difficulties the project experienced. A "radical innovation" is defined as "a major change that represents a new paradigm for carrying out some task" (Rogers, 2003, p. 426). As the project leader Lee Sun-myung said, this project was "a paradigm shift" and a kind of revolution including tapeless production and editing, server-based editing with direct server playout, nearly paperless production, and concurrent access to all video material by all staff members. One journalist recalled that a project team member confiscated his analogue tape.

However, these radical innovations needed very new organisational routines and eventually collided with SBS journalists' newsroom culture (see Table 4.16). Inevitably, SBS journalists had to acquire a large amount of knowledge to adapt, and they experienced so much uncertainty that it caused more difficulties in implementing the NDS project.

Some innovations are so radical and cause such great uncertainty that there is no choice but to adopt them through unstructured and irregular innovation processes. "Unstructured decision processes" are defined as "decision processes that have not been encountered in quite the same form and for which no predetermined and explicit set of ordered responses exists in the organisation" (Mintzberg, Raisinghani, and Theoret, 1976, p. 246). SBS's project was introduced through a representative type of unstructured decision process, because it had not met any similar form and caused unexpected responses, such as indifference or resistance. Naturally, SBS's radical innovation required a far more complicated process.

In January 2004, the engineering department and IBM engineers finished the set-up of the digital news production system. In February 2004, when news workers moved to the new headquarters in Mok-dong, they had to work with analogue equipment and learn digital ways of doing things at the same time. SBS first encountered cultural issues after adoption. As one news manager said:

> Primarily, no matter what kinds of new equipment are adopted, there are always culture issues involved. What was worse was that IBM Korea's contract with SBS was the first one providing a digital news production system and IBM thought that this contract was a good chance for themselves to accumulate experience (IT1, interviewed on 12 August 2007).

Obviously, the most difficult part of implementing the digital news production system was the initial stage.

> In the process of technical stabilisation, we were pressed for time to stabilise the digital news production system because the management unexpectedly shifted the date of moving headquarters a few months ahead. Originally, we planned to implement the new digital system by the end of 2003 because we anticipated that headquarters would move in May 2004. However, the producers of entertainment programmes such as music shows and talk shows moved a few months earlier since they wanted to use the better working environment of the new building. Following them, the moving day of other departments including the SBS newsroom was advanced by two months. Subsequently, journalists became more anxious about the stability of the digital news production system (IT1, interviewed on 26 July 2007).

> Lee and his project team created an uncomfortable newsroom atmosphere, which discouraged journalists from raising objections to the project. If the project progressed satisfactorily, even discontented journalists would have consented to accept the project. Regrettably, technical defects were found continuously for several months. Some extreme cases lasted for more than four years and even up to the present. To make matters worse, most plans for the project were not realised as previously arranged. For example, one of the most important goals of the NDS project was efficiency in news production. At the beginning, they aroused hopes that journalists would work in the greatly improved environment. Notwithstanding, journalists found great difficulties in searching data after newsgathering, simple editing by journalists at notebook computers, and in editing and

inserting subtitles for themselves. Contrary to the project team's promise to replace them, several newsroom staff that were responsible for subtitles editing and VCR playing were still in the employ of the SBS newsroom. Subsequently these disappointing results provoked widespread discontent among journalists (SR4, interviewed on 23 July 2007).

The newsroom has almost 300 journalists, of whom 150 are reporters in the field, along with 46 camera crews and 48 picture editors as well as ingest graphic and production staff. These personnel are served by one of the world's largest digital production systems, which was an integration of four modules: NRCS (Newsroom Computer System, i.e., text system), GVG Vibrant (NLE, nonlinear editing system), MAM (Media Asset Management) and IBM GPFS (the digital archive). The manager in the technology and engineering department was very proud to have created this revolutionary system that saved labour and fixed expenses.

On 25 February 2004, when the news department moved into the new digital building, the 4.00 p.m. News was broadcast digitally. Finally, on 21 June 2004, SBS officially announced the birth of the first all-digital TV station in Korea. The digital archive and a low-resolution search interface were also put into use at the same time. However, it was an ostensible success because the project had to abandon the planned structural changes in the organisation. Furthermore, they renounced the introduction of any more of the innovations, which were originally planned such as multi-skilling practices and newsroom convergence, newly defined job descriptions, the Information Support Centre, the Command Room, and the GPS system. In the end, all the goals except the mechanical and technical systems of digital news production were relinquished or postponed indefinitely. Accordingly, this study focuses on understanding what caused the SBS project not to complete its initial and original goals.

When SBS completed the tapeless news production process through the whole range from editing to storage, its project team, which was expected to tackle future challenges, was suddenly dissolved.

Organisational innovation

As stated above, newsroom digitalisation can cause changes in job descriptions (see Section 2.2.3). At SBS, the editors correspond to the chief editors of units such as Political News or Economic News in newspaper newsrooms. They were used to holding full power in directing and supervising journalists' newsgathering and allocating beats to journalists. This was a way of dividing responsibilities to secure stable and regular news supply (Kim, 2003, p. 131).

In addition, SBS editors have the power to give performance ratings on journalists, which are directly connected to their future career goals and choices. In other words, when a journalist is treated distantly by his or her Editor, it means that he or she will have no choice but to leave the company because usually no other editors would want a journalist once he or she was known to be out of favour with a certain Editor. The head of the project, Lee Sun-myung, thought this system was not efficient and had many problems. With their power to supervise news stories, editors tended to abuse their authority and make unfair profits.

> The editors who belong to middle management have conventionally enjoyed the privilege of being treated by the news sources. Every day, they receive mobile phone calls from executives of companies or government officials who were news sources for the journalists under their supervision. In accordance with the custom, editors were frequently invited to a free dinner, and almost every weekend, they went golfing with executives of companies or high officials of newsbeats who paid for editors in full (IT1, interviewed on 2 August 2007).

Corruption is perceived as ever present in Korea, which ranked 43rd (score 5.1) out of 179 countries in Transparency International's Corruption Perceptions Index for 2007 (*Korea Times*, 26 September 2007). A score of 5.0 is the number Transparency International considers the borderline figure, distinguishing countries that do and do not have a serious corruption problem. According to the Heritage Foundation, corruption in Korea is "encouraged by non-transparent rule-making and law formulation, inwardly cooperative societal, political and business structures; and insufficient institutional checks and balances" (online, retrieved 7 September 2009). As members of this Korean society, editors as well as ordinary journalists are no

exception. Most journalists, but not all, do not know how important it is to observe the code of journalistic ethics. They do not think that receiving a bribe is an act of corruption and a violation of professional ethics. These circumstances led Lee to make up his mind to remedy a corrupt system through altering the structure and practices of the SBS newsroom.

4.2.4 Clarifying: conflicts between the project team and journalists

According to Rogers (2003), clarifying occurs when the innovation is put into more widespread use in an organisation, so that the meaning of the new idea gradually becomes clearer to the organisation's members (p. 427). In the same way, Soroka and Jakovi (2004) define the clarifying stage as a process where the innovation is widely used and becomes clear to more and more members of the organisation (p. 2). In the meantime, Lawson-Borders (2003) noted that at the clarifying stage, the relationship between the organisation and the innovation is defined more clearly (p. 93).

Rogers (2003) warned that "too rapid implementation" (p. 427) of an innovation at the clarifying stage can lead to disastrous results and this was the case with SBS. One journalist said:

> Obviously, they were compelled to carry out the project and show that they obtained excellent results before the time set. We understand that it was unavoidable for the project team to have given rise to serious troubles. Nevertheless, it was clearly the project team's fault that the project team did not attempt to disguise their hostility and openly accused the journalists with opposing views on the project team of being uncooperative. The extreme case was that the project team threatened that the journalists who voiced a protest should be expelled from the SBS newsroom (SR14, interviewed on 20 July 2007).

> The project team should have innovated within the limits of the possible and should not have attempted the impossible, but finally it ended in that way. The trouble was that the team tried to make the impossible possible (SR14, interviewed on 13 September 2007).

> When the scheduled date of the first digitalised news broadcast was drawing near, the conflict between the project team and the opposing user group, which mainly consisted of editors and journalists of Editing Units One and Two was aggravated. Members of Editing

> Units were responsible for news transmission and consequently they were all nerves. If they committed errors in news broadcasting, disciplinary punishments for them were severe, and included submitting a written apology to the Editor-in-Chief which would produce a bad effect on their merit rating. Lee and Engineering Manager Cho Yong-Dae, who represented the NDS project team, were confronted by the Editor Kim Sung-woo and deputy manager Lee Eun-jong, who stood for journalists and assistant staff of the Editing Units One and Two (SR14, interviewed on 13 September 2007).

The staff I interviewed who were members of the Editing Units at that time still think they were given unfair treatment by the project team. For instance, one respondent criticised the fact that the NDS forced the news presenter to control the prompter in order to reduce staff by one.

> As a result, the presenter had to suffer from the technical instability of the prompter control system. For example, when the presenter handled the control lever to search the stories to rehearse, the monitor screen scrolled erratically up and down to somewhere else (SR14, interviewed on 13 September 2007).

The two camps opposed each other at every chance and blamed each other for errors in the process of news broadcasting.

> In the early stage, the rundown often froze or moved erratically into somewhere else and subsequently the strip of the weather forecast on the rundown moved from the normal sequence to the middle of news hour. If we complained of such troubles to the project team, they insisted that somebody in the gallery must have touched the buttons by mistake. Their argument was unreasonable because we do not place the weather forecasts in the middle of news hour. They are usually put at the end of the rundown with the exception of special weather reports such as a heavy rain or a heavy snow warning (SR14, interviewed on 13 September 2007).

> I don't oppose the NDS project as a whole. Nevertheless, in the process of implementation, the project team insisted stubbornly that the digital news production system was no problem, which was at variance with the reality. Moreover, they never conceded that they were wrong, and there were some serious technical defects in the NDS system. The absurdity of the situation drove us to indignation (SR14, interviewed on 13 September 2007).

> The dispute became aggravated and it was beyond description. Naturally, we have an equal right to express our views. Nevertheless, it was wrong for the project team to have made personal attacks on journalists, in particular, those of Editing Units One and Two. It was not that we rejected the NDS system, but we wanted to introduce the system after making the NDS system perform perfectly. Nonetheless, we think it was unjust for them to have labelled us as irresponsible employees. The charge of unreasonableness brought about a grave situation (SR14, interviewed on 13 September 2007).

Apparently, those who were responsible for mediating the dispute, such as the then Vice President in charge of News and Sports Headquarters, did not fully understand what both sides wanted. In particular, the then Editor-in-Chief was quite at a loss and all he was able to do was just to persuade both to meet half way.

> In the process of establishing the text system, considerable trouble had arisen between the project team and journalists, the end users of the system. Journalists needled the project team over their failure to design the user-friendly text system. They complained about the performance of NRCS (newsroom computer system), which the project team had developed independently. Obviously, the new system was more complicated, and in addition, less efficient than the previous Notes model, which was a world-famous brand (SR14, interviewed on 13 September 2007).

> The dispute which started in March lasted until the end of June. The SBS branch of the Journalists Association of Korea (JAK), which represents most Korean journalists except news executives and other management groups, voiced a protest against the instability of the NDS system (SR10, interviewed on 20 July 2007).

The problem was solved without the intervention of the SBS trade union, whereas the SBS branch of JAK (Journalists Association of Korea) officially demanded the project team finish the trouble shooting as soon as possible. However, the SBS branch of JAK did not report this case to the headquarters of JAK.

> Representatives of the SBS branch of the JAK (Journalists Association of Korea) and members of the project team met from time to time and exchanged opinions about the project. When the Head of the SBS branch of the JAK filed complaints through phone calls or email, the project team immediately resolved them (IT4, interviewed on 26 July 2007).

In March 2004, the conflict between the two camps reached its climax when SBS started to broadcast short news bulletins through the digital news production system as a test. Lee Sun-myung and Kim Kang-suk, the leaders of the two camps, had a heated discussion in the regular executives' meeting. In the middle of levelling criticism at each other, Kim unexpectedly handed in his resignation and then left the meeting room indignantly.

> Thereafter, the conflict did not come to the surface until June 2004 when SBS broadcast all the news bulletins including the main 8 o'clock News. However, this tension caused by the defects found in the transmission system was soon relaxed since the repair technicians of the project team fixed them quickly (SR10, interviewed on 20 July 2007).

> Archive Manager Lee Hyung-gi seemed to have experienced extreme pain. Although he had worked as a member of the NDS project team for several months, he changed suddenly and attacked his former associates of the project team when he returned to his former position. He seemed to have no choice but to speak for the end-users, in particular, he felt that the camera crews and picture editors should not be attacked on both sides by both the project team and the users group. The Archive Manager told me that he did not want to work any longer with this unstable system because he was being seized by fear of the paralysis of the NDS digital system (SR10, interviewed on 20 July 2007).

The differences of point of view on the NDS project between the two sides were distinctive (Table 4.15). Firstly, on the digital system, the head of the project team, Lee, of course championed it, whereas Kim, the Editor, distrusted the system and expected it to fail. Lee thought the successful implementation of the project was imperative because he had to accomplish the mission assigned to him by the Chairman, Yoon. On the contrary, Kim, as Head of Editor Unit 1, was responsible for stable and credible transmission of news bulletins including SBS's flagship news bulletin, the 8 o'clock News.

Secondly, concerning the establishment of the Command Room, which was the first cause of their conflict, Lee thought the Command Room should be installed and put into operation as soon as possible to implement the strategic mission and tactical operation of the digitalised newsroom. However, as far as Kim was concerned,

installing the Command Room was impractical and a useless idea that should be abolished immediately.

Thirdly, on the risk of a crash of the digital system, Lee insisted the system was not vulnerable to any system crash, and furthermore, in order to lead the Korean broadcasting industry, it was necessary to run the risk of technical crashes at the earlier stage of introducing the digital news production system. On the other hand, Kim argued that the digital system was too risky to be operated in practice.

Table 4.15 Differences between the views of the leaders of the two sides

Issues	Head of the project, Lee Sun-myung	Editor Kim Sung-woo (Head of the Editing Units)
On the digital news production system	Championed the digital news production system	Distrusted the digital news production system
On the Command Room which was the first cause of their conflict	The room is essential for the better journalism	It is an impracticable plan.
On the risk of the paralysis of digital system	Unlikely. We should be ready to run the risk.	Likely. It is unreasonable to take the risk

> In the end, the Editor-in-Chief was bored by the friction between the two editors and studied the matter from all angles. However, he found that none of his ideas offered a real solution to the problem. In March 2004, thinking out a plan as a last resort, the Editor-in-Chief asked my opinion about his idea to swap their positions. I discouraged his attempt because I thought that the head of the project, Lee, should complete the NDS project. There is a proverb which says "Never swap horses while crossing the stream." This is a behind-the-scenes story between the Editor-in-Chief and me so that even the two editors concerned may not have heard about it (SR10, interviewed on 20 July 2007).

There were several cases of conflicts between the NDS project team and journalists as end-users. One of the most remarkable cases happened just after the first experimental digital news broadcast. In March 2004, when the NLE (nonlinear editing) system crashed and a journalist had to give up editing his news story, he threw his videotapes on the floor showering abuse on the picture editor. The picture editor, who was formerly a member of the NDS project team, was enraged at the insult from the journalist. They were on the brink of a fight.

Another case was caused by the crash of the main server. In April 2004, just before the SBS's flagship news bulletin, the 8 o'clock news, the main server for transmission suddenly stopped operating. The staffs were at loss and started to scream and shout loudly. It occasioned terrible confusion. Fortunately, however, the repair technicians fixed the system in a few minutes. Table 4.16 shows the conflicts that occurred during the process of newsroom digitalisation.

Table 4.16 The cases of conflict

Incidents	NDS	End-users
In March 2004, NLE (Nonlinear editing) system trouble made a journalist give up editing his piece. This pushed matters to the brink of a fight.	The picture editor who used to be a member of NDS project was enraged at the insult from a Senior Journalist.	A reporter (who requested anonymity by the interviewee) threw his videotapes on the floor showering abuse on the picture editor.
In April, just before the news hour, the server for transmission suddenly stopped operating.	The repair technicians fixed the system in a few minutes.	The staffs were at a loss and started to scream and shout. It occasioned terrible confusion.

> At that time, I was displeased with journalists who objected to the NDS project. In particular, a few junior journalists lifted a hand against me in a fury. All members of the project were utterly exhausted in mid 2004. As time went by, most problems were solved (SR10, follow-up interview on 2 August 2007).

These interventions helped journalists apply the new system to their current practices and routines. In June 2004, after two years, SBS finally finished its digitalisation and broadcast all news bulletins through the NDS system. SBS's clarifying sub-process took a long time because it emphasised the significance of learning and knowledge management. SBS offered systematic courses for TV news digitalisation. From 2003 to 2004, all employees involved in news work were required to attend the training courses.

After SBS began to broadcast its newscasts digitally in June 2004, the SBS project team concentrated their energies on the technical troubleshooting. However, the biggest problem was how to maintain the technical stability of the new digital system (SR2, interviewed on 8 July 2007). Until then, the NDS system had never been used to produce news.

4.2.5 Routinising: additional innovations failed to be routinised

According to Rogers (2003), routinising occurs when an innovation has become part of the regular activity of the organisation and "has lost its identity as an innovation." This point is the end of the innovation process (pp. 428-429). Similarly, Soroka and Jakovi (2004) noted that at the routinising stage the innovation stops being considered as such – that is, it loses its identity as a new technology and becomes a part of the everyday routine of the organisation (p. 2). On the other hand, Lawson-Borders (2003) suggests that routinising is still unfolding for media organisations as they deliberate over strategies and best practices to propel themselves into the future (p. 93).

Of the various innovations, which were promoted by the SBS project team, most of the additional innovations were discontinued. In the same manner, Rogers (2003) suggests that innovation in an organisation may be susceptible to discontinuance, and although an innovation process takes place successfully, "unexpected problems" can occur when the routinising stage is in progress (p. 430). For example, SBS's proposed innovations of introducing a Command Room and the desk-sharing system were discontinued.

Routinising is closely related to sustainability, the degree to which an innovation continues to be used after initial efforts to secure adoption are completed (Rogers, 2003, p. 428). This theory explains why SBS's additional innovations were abolished within less than one year. Those innovations suffered from lack of sustainability and failed to be routinised. As stated above, at this routinising stage, SBS should have been deliberating over strategies and best practices to propel the organisation into the future. However, SBS decided to dissolve the project team at the end of 2004, when they had completed the introduction of digitalisation into the news production system.

4.3 Strategies for innovation

This section discusses what kind of implementation strategies SBS used and how they worked in the newsroom digitalisation process, using Rogers' (2003) framework,

Leonard-Barton's (1988) three strategies, and Lin's (2007) four additional strategies (see Section 2.7).

(1) Incentives

As stated in chapter 2 (see Section 2.7), Rogers (2003) classified incentives to increase the rate of adoption into five forms: adopter versus diffuser incentives; individual versus system incentives; positive versus negative incentives; monetary versus non-monetary incentives; immediate versus delayed incentives. On the other hand, Singer (2004) showed instances of monetary and non-monetary incentives (see Section 2.7).

It seems quite probable that whether a broadcaster employs monetary incentives or not depends on its circumstances. For example, Aviles et al. (2004), who explored the impact of new technology on journalists' attitudes and practice in six digital newsrooms in Britain and Spain, show that none of them provided journalists with financial rewards to encourage them to learn the new digital news production system. This means those six broadcasting companies did not need any monetary incentives because they were able to implement newsroom digitalisation successfully without any financial rewards. On the other hand, SBS, which experienced considerable difficulties in introducing the news digital system, should have considered policies for rewarding incentives. However, SBS innovation leaders did not think that incentives would play an important role in implementing newsroom digitalisation. As a result, lack of incentives led to the limited success of the SBS project.

> The project team should have considered providing incentives to excellent digital learners so that the new technologies diffused more rapidly in the newsroom. They just made efforts to persuade journalists to embrace NDS. However, that was not enough to give an impetus to journalists. However, it must have been difficult to have operated an incentive scheme for journalists, because the trade union would have raised an objection to it (IT3, interviewed on 6 September 2007).

However, SBS lacked incentives. SBS did not consider incentives, not because of these ethical considerations, but because of its authoritarian culture.

> There should have been certain incentives. It was not enough to persuade journalists without incentives. It is natural that human beings dislike change. Everybody may have felt embarrassed as to how to bring up the issue of incentives. Knowing well that the idea had no chance of being accepted by the company, no one could have suggested it at the risk of his career (IT3, interviewed on 6 September 2007).

In contrast with SBS, a Taiwanese TV station ETTV provided monetary incentives and promoted excellent digital learners (Lin, 2007, p. 93). For example, at the end of training to learn the skills to use the new digital news production system, those who were selected as instructors got a 25% to 50% raise in salary. In addition, those who passed the evaluation test stayed and signed a two-year contract.

> The major implementation tactic is encouragement. Simply put, giving rewards and money. We had a budget for that, but did not use it up, because the implementation went better than we thought. We trained everyone within 3 to 4 months, or some in half a year (ETTV News Manager, cited in Lin, 2007, p. 93).

(2) Training

DR News, a Danish broadcasting company, emphasised the importance of training in digital transition, saying "training, training, retraining and still training" (EBU report-c, 2005, p. 11). In the same manner, the SBS project team thought the most important factor for digitalisation was, after all, human resources, the best way to develop the man power was training and it offered the four-stage training courses as shown in Table 4.17.

Table 4.17 The four stage training of the SBS newsroom digitalisation

Stage	Period	Training
1st stage	August 2003	General conception of the newsroom digitalisation
2nd stage	October 2003	Basic skills for digital news production
3rd stage	January 2004	Professional education
4th stage	March 2004	Advanced practical training

Sources: Lee (2004a, p. 74)

According to Aviles and Leon (2002), at Antena 3, where journalistic training was also among the most expensive and most critical elements of its transition to digital,

most of the courses took place in the newsroom, in order to make them more reliable and also to reduce costs (p. 359), and the SBS project team also ran most training classes in the newsrooms. Lee, the head of the project, said that training was provided both in theory and in practice to conquer the fear of the SBS journalists who had to adapt to the new system. In particular, at the second stage, 447 people from thirteen areas, including journalists, craft editors, camera crews and engineers, attended the class for about two months from 27 October to 23 December 2003. During this stage, the project team focused on ten areas such as the basic theory of the NDS (News digital systems), NLE (nonlinear editing), ingesting and archive.

Lee said that the training was the most critical and hardest part of the digitalisation process, and therefore he had no choice but to take coercive measures to make all journalists attend the classes.

> Journalists are working in a stressful environment with frequent night duties, and tours of ~~on~~ duty unexpectedly ordered by their superiors. Furthermore, SBS journalists are overloaded since the number of staff is much less compared to those of competitors such as KBS (twice the number of SBS journalists) and MBC (one and a half the number of SBS journalists). So, I decided that the project team should admit of no exception (IT1, interviewed on 2 August 2007).

He added that compulsory training was possible since he received strong support from the management (IT1, interviewed on 2 August 2007). Subsequently, the training for SBS newsroom digitalisation showed a 97.3% attendance rate (Table 4.18).

Table 4.18 The training of the final stage in 2004

Period	Training	Trainees	Attendance
15 Jan – 4 Feb	Basic course of NLE (nonlinear editing)	9 camera crews from local bureaus	9 (100%)
26 Jan – 19 Feb	(2nd course for journalists only) how to use archive system off line NLE (nonlinear editing)	149 journalists from News & Sports divisions	148 (99%)
17 Feb – 19 Feb	Ingest for Foreign News feeds	8 temporary staff for receiving feeds	8 (100%)
23 Feb – 27 Feb	(3rd course for journalists only) recording voice over, monitoring of the picture editing	134 journalists	133 (99%)

16 Mar – 19 Mar	Advanced course for Deputy editors	20 Deputy editors	20 (100%)
23 Mar – 26 Mar	Advanced course for editors	15 editors	15 (00%)
1 Apr – 14 Apr	(4th course for journalists only) searching archive materials, recording sound bites, CG (Computer graphic) DVE (Dissolve effect)	149 journalists	148 (99%)
21 Apr – 23 Apr	Supplementary class for the journalists who missed the class above due to covering the general election		
14 Jun – 18 Jun	(5th course for journalists only) New text system, Rough-cut editing for journalists and searching materials from the archive	149 journalists	145 (97.3%)
Total		633	616 (97.3%)

Source: Lee (2004a, pp. 75-76)

According to Aviles and Leon (2002), who conducted research on the newsroom digitalisation of Spain's Tele 5 and Antena 3, executives from both networks invested in courses to train their newsroom staff in managing the digital news production system to address the the biggest challenges they faced, in other words, adapting journalists to the new tools and convincing them that the technology was going to make their lives easier (p. 359). In the same way, the SBS project team started the training from August 2003. The training courses were offered to help journalists who saw the introduction of such new systems with a great deal of anxiety.

The head of the project team, Lee, said that "journalists were half in doubt as to whether the project was successfully introduced till I attended the courses arranged to train journalists in dealing with the new systems" (IT1, interviewed on 26 July 2007). There were views for and against the measures taken by the project team. Some journalists were embarassed about the attitude of the project team who exacted obedience from journalists in the process of training.

(3) The implementation strategies in three aspects:
As stated above, Leonard-Barton (1988) suggests implementation characteristics, which set conditions for managers to design their implementation strategies in three aspects:-; user involvement, the supporters, and mutual adoption (see Section 2.7)

(1) User involvement

In the SBS newsroom, journalists were not provided with any opportunities to participate actively in selecting such an important core production technology or in making decisions for adopting digital TV news production systems, because the most important adoption and implementation decisions were made by the management. Subsequently, "user involvement" was a critical factor that led to successful implementation. While few users got involved in the implementation by showing interest in the process of newsroom digitalisation, the majority of users could only choose different levels of usage. Although increasing user involvement could have led to getting more users to adapt to the new technology earlier, SBS journalists who were excluded from the important decision-making procedures did not feel that they were important in the process, and they had no choice but to assume the attitude of an onlooker.

> As far as I know, the seven-member project team took the lead in SBS newsroom digitalisation. There were no supporters to assist the team when the members of the team were in difficulties, because few journalists thought the news digitalisation project was their own job and something that should be carried out with their participation. Since most journalists knew that as they moved to the new headquarters in Mok-dong, newsroom digitalisation would be introduced, they just sat back and watched without trying to help the members of the project. Actually, we did not have any right to decide whether to participate or not, and under these circumstances, we were forced to be servile to members of the project team (JR10, interviewed on 11 July 2007).

With even the best technology, if users are unenthusiastic about adopting it, the implementation is doomed to fail. The SBS project team was not successful in arousing journalists' interest in the project, and this caused the difficulties the team experienced in the process of newsroom digitalisation.

(2) Supporters

Regarding the supporters, Leonard-Barton (1988) suggests that in order to implement digital innovation successfully, the presence of champions and sponsors is important (see Section 2.7). However, the SBS project team did not have any supporters to depend on, and this led them to experience great difficulties.

(3) Mutual adoption

Leonard-Barton (1988) also emphasised the importance of mutual adaptation of both the new technology and its intended user organisations (see Section 2.7). Regarding this, SBS abandoned several innovations such as CG (computer graphic), which were originally designed to allow journalists to ask CG experts through the networked system in order to smooth the digital transition and fit their production process. Later, the SBS project team continued to undergo technological troubleshooting, debugging and relative technological modifications.

(4) Four additional strategies

(1) Communication

In chapter 6, this study categorised the communication channel as one of the factors influencing diffusion of innovation, according to the framework of Rogers (2003). However, this chapter focuses on the role of communication as a strategy to promote the diffusion of innovation.

Aviles et al. (2004) highlighted the importance of communication between the journalists and engineers citing a director of Telemadrid who said that, to find out journalists' needs, engineers worked with journalists who must feel comfortable with the new systems, spending eight hours a day working on a computer (p. 92). In addition, the cooperation between the technical and journalistic areas was also emphasised by news directors at the BBC and ITN whose joint work played an essential role in making decisions about comprehensive changes in outdated work systems and practices. However, in the case of SBS, the collaboration between the journalists and engineers was not so effective.

> There were conflicts between the project team and journalists. In particular, the dispute was quite acute between members of the project team who were under an obsession that the project should be completed successfully and news-editing journalists who were worried about the stability of the new systems because system crashes were directly connected with the evaluation of their merits. Furthermore, there were serious conflicts even between the department of computer systems, which led the newsroom digitalisation, and the department of broadcasting engineering, which consisted of experts in analogue

technologies. The dispute over which department should control the IT equipment was not settled until the Editor-in-Chief arbitrated between them (IT4, interviewed on 26 July 2007).

(2) Top management support

Top management support is particularly important to implementation of a new production technology like the digital TV news production systems with radical changes in stressful news working settings. Singer (2004), who conducted research on media convergence in four US newsrooms, found that journalists in all research sites "saw the initial impetus for convergence as coming from above," and the innovation was "something their bosses and their bosses' bosses wanted to do – and the change was not contestable" (p. 13). At the same time, Singer (2004) observed that "there was a strong sense, among all levels of the newsroom organisation, that a top-down approach to adoption, in which managers simply tell staff what to do, would be a disaster" (p. 13).

As shown above, in the process of newsroom innovation, the role of management is essential. At the same time, for the management to lead journalists successfully is not so easy. Lee, the head of the project, believed that as long as top management understood their pioneering status and did not blame them for system crashes, it was fine to take the risk of unsafe broadcasting.

> The Chairman, Yoon, understood our difficulties and he was lenient with problems such as system crashes and resistance from the journalists. Besides, he was determined to implement TV news digitalisation and showed a strong will to solve executive problems in the inter-departmental negotiations, including the disputes between the journalist and the project team (IT1, interviewed on 26 July 2007).

From the beginning, the idea of SBS newsroom digitalisation was suggested by the Chairman, and therefore, what the managers had to do was think about efficient strategies to implement the news production systems successfully. In fact, after drawing up the budget, the SBS Chairman and then the CEO entrusted Lee Sun-myung, the head of the project, with full power to execute the budget since the top

management had limited knowledge of newsroom digitalisation, and were actually too busy to interfere in the project.

However, the top management changed their attitude when the project encountered fierce resistance from the journalists, and they advised the head of the project to make a compromise. On the other hand, middle management were more uncooperative from the beginning. They implicitly sympathised with the journalists because they also found that newsroom digitalisation was against their own interest, since it deprived them of their privileges as middle managers. In particular, the Command Room was regarded as the most disappointing idea by the middle managers such as editors and deputy editors. As a result of all this, the project team was destined to experience serious difficulties in the process of implementing newsroom digitalisation.

(3) Gradual Implementation

Gradual implementation as one of the promotion strategies is introducing new systems not all at once but step by step. The SBS project team broadcast digitally from one off-peak newscast, that is the 5 p.m. News, and added more after that had proved to be broadcast safely. After the incremental process, finally SBS completed the digitalisation by transmitting the main news, the 8 o'clock news, digitally. Although the project team tried to introduce the new systems gradually, SBS was not very successful in making a soft landing because digital news production technology had never been used before in Korea. It was unfamiliar to everyone involved, including journalists, engineers, even members of the project team and the employees of technology contractors. Furthermore, the project team, which was created in mid 2002, had to complete all the processes of implementation with a two-year deadline, by mid 2004.

> The project team had to show the progress within every three or four months according to the schedule chart. This pressure gave the project team no choice but to burn the candle at both ends. On the other hand, if the project team had not been pressed for time, they could not have been praised by the management and could not have pushed on with the project forcing journalists to devote all their energies to it. After all, whoever did this project, it was not easy to overcome diverse difficulties encountered during the implementation processes (JR3, interviewed on 24 August 2007).

(4) Reducing the gap

Reducing the gap between the new and old is another challenge to be overcome for successful digital transition. Garrison (1998) observed that "a severe haves and have-nots dichotomy in computer skills has emerged in many newsrooms" (p. 22). In the same context, among SBS journalists there were serious problems of a haves and have-nots divide in digital technology skills. One journalist said:

> Training was not so important because the largest group of reporters were able to adapt to the new digital systems with just a brief course of training since they had basic and necessary computer skills. The difficulty was with the old journalists who were unskilled in using digital systems (JR3, interviewed on 24 August 2007).

The digital divide in the SBS newsroom has been repeatedly evident over the past few years. In particular, the gap in skills between young craft editors and old photographers has been serious. An absolute majority of the respondents (94.4%) agreed with the statement that "Young SBS journalists, around the age of 30, who were familiar with digital technology adapted to the digital news system more quickly than those who were older than them", whereas only a small minority (1.6%) disagreed (Table 4.19).

Table 4.19 Young SBS journalists, around the age of 30, who were familiar with digital technology adapted to the digital news system more quickly than those who were older than them.

Strongly agree	Agree	Neutral	Disagree	Total
22	96	5	2	125

In terms of age, the majority of those aged 40 or over (95.3%) and under 40 (93.3%) agreed with the statement "Young SBS journalists, around the age of 30, adapted to the digitalised news system more quickly than those who were older than them" (Table 4.20).

Table 4.20 Young SBS journalists around the age of 30, who were familiar with digital technology adapted to the digital news system more quickly than those who were older than them.

Age	Strongly agree	Agree	Neutral	Disagree	Total
Under 40	11	45	3	1	60
40 or over	11	51	2	1	65
Total	22	96	5	2	125

With regard to the respondent's position, all of the senior editors (100%), most of reporters (94%) and sub-deputy and deputy editors (93.2%) agreed with the statement. This means that regardless of their position, the overwhelming majority of SBS journalists agree that there was digital divide between the younger generation and senior journalists (Table 4.21).

Table 4.21 Young SBS journalists, around the age of 30, who were familiar with digital technology adapted to the digital news system more quickly than those who were older than them.

Position	Strongly agree	Agree	Neutral	Disagree	Total
Reporters	8	39	2	1	50
Sub-Deputy & Deputy Editor	12	43	3	1	59
Senior Editors	2	14	0	0	16
Total	22	96	5	2	125

More than half (59.2%) agreed with the statement that "I have experienced difficulty in picture editing with the senior cameramen who were not yet skilful enough to edit pieces with the NLE editing system," while less than one-fifth (16.8%) disagreed (Table 4.22).

Table 4.22 I have experienced difficulty in picture editing with the senior cameramen who were not yet skilful enough to edit pieces with the NLE editing system.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
8	66	30	20	1	125

In terms of position, the higher their position, the more difficulty they experienced. Almost two-thirds of ordinary reporters (66%) and more than half of sub-deputy and deputy editors (59.3%) agreed with the statement, while just slightly more than one third of senior editors (37.5%) agreed with the statement (Table 4.23).

Table 4.23 I have experienced difficulty in picture editing with the senior cameramen who were not yet skilful enough to edit pieces with the NLE editing system.

Position	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
Reporters	4	29	12	5	0	50
Sub-Deputy & Deputy Editors	3	32	14	10	0	59
Senior Editors	1	5	4	5	1	16
Total	8	66	30	20	1	125

4.4 Summary

This chapter discussed the process by which SBS introduced the digital TV news production system into the SBS newsroom in terms of the organisation, focusing on 1) the process of the adoption of digitalisation by the SBS newsroom; 2) the process of innovation at the organisational level; and 3) strategies for innovation.

At the agenda-setting stage, the project team decided to introduce additional goals to promote efficiency, such as replacing journalists' own desks with large tables for common use. However, these goals caused journalists to become disillusioned with the original goal. In the end, the project team suffered a considerable weakening of the driving force while having to overcome the journalists' resistance aroused by these additional goals.

Furthermore, SBS innovation leaders did not think that incentives would play an important role in implementing newsroom digitalisation. There should have been certain incentives because it was not enough to persuade journalists without them. As a result, a lack of strategies led to the limited success of the SBS project. Consequently, as mentioned in Section 4.2, most additional goals were relinquished and conflicts occurred between the project team and journalists. In the next chapter, the process of implementing the digital news system in terms of the journalist is discussed.

Chapter 5 Process of Implementing the Digital TV News Production System in Terms of the Journalist

This chapter analyses the qualitative data collected from interviews, group discussions, observations, in-house documents and quantitative data collected from a questionnaire survey, in order to answer RQ2: "What was the process by which SBS introduced the digital TV news production system into the SBS newsroom in terms of the journalist?" This chapter discusses the process by which SBS introduced the digital TV news production system into the SBS newsroom in terms of the journalist. Using the Rogers' (2003) model of five stages in the individual innovation-decision; knowledge, persuasion, decision, implementation, and confirmation, section 5.1 analyses the adoption process of SBS journalists.

Subsequently, based on Rogers' (2003) theory, sections 5.2 analyses perceived attributes of the innovation. Section 5.3 examines type of innovation decision, section 5.4 investigates communications channels, section 5.5 explores nature of social system, and section 5.6 discusses extent of promotion efforts by change agents. And then, section 5.7 investigates responses from SBS journalists and obstacles to the digital innovations. Finally, section 5.8 summarises main points discussed in this chapter.

5.1 Adoption process in terms of the SBS journalists

Based on the framework of the individual innovation process (see Figure 2.2), this chapter examines the process of innovation in the SBS newsroom in terms of the individual journalists. Table 5.1 shows how SBS adopted the digital news production system.

Table 5.1 The innovation processes in terms of the journalist

Stages	Responses	Time
(1) Knowledge	Negative attitudes towards the NDS project made the SBS journalists unenthusiastic about adopting the innovation	September 2001
(2) Persuasion	Journalists made a negative interpretation of the message of the project team	July 2002
(3) Decision	SBS journalists had no choice but "adoption"	July 2002
(4) Implementation	Additional innovations caused resistance	December 2002
(5) Confirmation	Some journalists reversed their decision to adopt the project.	December 2002

5.1.1 The knowledge stage: negative attitudes towards the NDS project made the SBS journalists unenthusiastic about adopting the innovation

According to Rogers (2003), the individual innovation-decision process begins with the knowledge stage, which begins when an individual is exposed to an innovation's existence and gains some understanding of how it functions (p. 171). SBS journalists were first exposed to the innovation through the education and training courses in June 2003. According to Seligman (2006), this exposure may happen by chance, or may have been the result of an effort to seek out the innovation once the individual had identified a need for it (p. 116). However, the case of SBS journalists was different because they were mandated to be exposed to the innovation.

At this point, although the individual is exposed to the innovation, he/she neither has adequate information about it, nor possesses the motivation to gather more. Unfortunately, most SBS journalists did not become interested in the innovation because they thought that the project was not in line with their needs. This supports Rogers' (2003) argument that "individuals tend to expose themselves to ideas that are in accordance with their interests, needs, and existing attitudes" (p. 171). Regarding the SBS journalists' attitude about the project, a reporter said:

> So far we have managed without the digital system. The project team failed to achieve the general consensus about the need of the innovation among the members of the newsroom. What in the world are the project team doing now? We were content where we were. Most

> journalists felt annoyed with the change in existing practices because they were already overloaded by preparing news items for news bulletins (JR9, interviewed on 20 July 2007).

SBS journalists began to be exposed to NDS a long time before the project team was established (2 July 2003) (see Section 4.1 and Table 4.4, Timetable of Digital TV System Adoption in SBS).

> SBS journalists began to grasp the concept of the new system in early 2003, when the project team settled down to some extent, and I published related information serially on the SBS intranet about NLE (Nonlinear editing), automatic transmission, and digital archive and so on (IT1, interviewed by email on 7 September 2009).

However, it was at the first stage of the NDS training schedule in June 2003, where the project team provided journalists with the basic conceptions of the SBS news digital system (NDS), that journalists officially established contact with the project. Unfortunately, the journalists were not very interested in the new system, because it challenged their existing idea that the SBS, as the third largest national network in Korea, could not afford to run the risk of implementing the new digital system.

> From the beginning, a great number of SBS journalists were opposed to the NDS project as a whole because they regarded the project as decidedly risky and even threatening the existence of their place of work, SBS. If the management failed in the project, SBS would suffer irreparable loss in business. This experimental project should be carried out by the government run broadcasting companies such as KBS and MBC, which were sufficiently capitalised. In other words, they thought that letting their trials and errors serve as a good lesson to SBS was a more effective strategy to convert the existing analogue system to the digital system without substantial risk. They never understood that SBS should take a leap in the dark (SR2, interviewed on 8 July 2007).

One SBS journalist said that most SBS journalists appeared completely unconcerned about why and how the project was introduced (SR1, interviewed on 11 July 2007). In addition, they were opposed to the project, which they felt had not been properly considered.

A need is a state of dissatisfaction or frustration that occurs when an individual's desires outweigh the individual's actualities. An individual may develop a need when he or she learns that an innovation exists. Therefore, innovation can lead to needs, as well as vice versa (Rogers, 2003, p. 172). In the case of SBS journalists, the company created needs among their employees, whereas journalists themselves did not develop their need even when they learned the innovation of NDS existed. Although Rogers (2003) argues that innovation can lead to needs, as well as vice versa, SBS was not such a case. SBS's innovation, that is, NDS, was created by the needs not of journalists but of the management. Consequently, only the needs of the management of SBS created the innovation of NDS, not the journalists, who were rather indifferent about the innovation.

According to Rogers (2003), when change agents just identify where advantageous new innovations are, needs can be generated, and the information about a new idea may prompt change clients to gather more knowledge about it and consequently to adopt it (p. 172). The NDS project team, who were change agents, led the process of creating needs and consequently SBS underwent the process of creating needs by the change agents. However, the team had to encounter fierce resistance from journalists because they did not feel need for the innovation. In other words, while SBS journalists knew about the innovation to some extent, they were unenthusiastic to use it because they did not consider it pertinent to their circumstances or beneficial in the future.

The attitudes shown by the SBS journalists support Rogers' (2003) views that "knowing about an innovation is quite different from using it" (p. 174), and that, although people know about an innovation, when they do not think of it as pertinent to their situation or as prospectively helpful, they may not adopt that new idea.

Consequently, negative attitudes towards the NDS project made the SBS journalists unenthusiastic to adopt the innovation. Thus their negative attitudes or beliefs about NDS significantly strengthened their resistance to the process of innovation. The idea of NDS was limited to the knowledge role in the earlier stage, and only after a long period of persuasion by the project team did the journalists unenthusiastically begin to adopt the innovation.

5.1.2 The persuasion stage: journalists made a negative interpretation of the message of the project team

Rogers (2003) suggests that the individual shapes an attitude towards the innovation at the persuasion stage in the innovation-decision process, and attitude is a relatively lasting organisation of an individual's beliefs about an object that predisposes his or her actions (Rogers, 2003, pp. 174-175). However, he distinguishes the definition of "persuasion" from some other researchers who define it as a source's communication with the aim "to induce attitude change in a desired direction on the part of a receiver." In particular, he highlights that his definition of persuasion is equivalent to "attitude formation and change" on the part of an individual but not necessarily in the direction intended by some particular source, such as a change agent.

Whereas the mental activity at the knowledge stage was mainly cognitive (or knowing), the main type of thinking at the persuasion stage is affective (or feeling). Until an individual knows about a new idea, of course, he or she cannot begin to form an attitude towards it (Rogers, 2003, p. 175). The SBS journalists' negative responses to NDS were produced at this stage, because they did not like the innovation, not only cognitively but also affectively. They formed their attitude independently and resisted the urge of the project team to adopt NDS quickly. The process of exchanging opinions among peers led SBS journalists to have negative responses to the project.

> It is crucial to obtain journalists' approval in such a great task as the NDS project. However, Lee, head of the NDS project, failed to win consent from them. They should have paid careful attention to the trends of journalists' opinions. If the project leader had been someone other than Lee, the project could have been more successful. He was authoritative and severe with junior journalists. The friction and resistance were caused by the fact that he enforced his plans without winning the support from members of the newsroom (JR7, interviewed on 10 July 2007).

What made this resistance deeper and more widespread was the instability of the system, for example, system crashes during the picture editing or transmitting of news bulletins. In response to the statement: "Instability in the system was the biggest dissatisfaction when the digital news production system was first implemented," more

than three-quarters of respondents (76%) agreed, while only 12.8% said they did not think instability was the biggest problem. In particular, no one said they "strongly disagreed" with the statement (Table 5.2).

Table 5.2 Instability in system was the biggest dissatisfaction when the digital system was first implemented.

Strongly agree	Agree	Neutral	Disagree	Total
20	75	14	16	125

At the persuasion stage the individual becomes more psychologically involved with the innovation, and he or she actively seeks information about the new idea, decides what messages he or she regards as credible and decides how he or she interprets the information that is received (Rogers, 2003, p. 175). SBS journalists who experienced the unexpected system crashes did not consider the information provided by the project team as trustworthy and, consequently, they made a negative interpretation of the messages of the project team.

> Whenever broadcasting accidents occurred, journalists scrambled to report their experiences about the problems of digital systems on the SBS intranet. They always blamed the flaws in the systems, even when those accidents were caused mainly by their own faults. This led to journalists' widespread distrust in the NDS project (IT1, interviewed on 2 August 2007).

5.1.3 The decision stage: SBS journalists had no choice but "adoption"

At the decision stage, an individual "engages in activities that lead to a choice to adopt or reject an innovation" (Rogers, 2003, p. 177). In the case of SBS journalists, they did not have the chance to adopt or reject the digital news production project because the management had mandated it, and this meant that if a journalist did not adopt the project, he/she could lose his/her job. As a result, they had no choice but "adoption" – defined as "a decision to make full use of an innovation as the best course of action available" – whereas they resisted the additional innovations, such as the introduction of a Command Room or removal of journalists' individual desks. However, this was not rejection, which is defined as "a decision not to adopt an innovation" (Rogers, 2003, p. 177), but just resistance, because they did use the additional innovations,

although they really did not want to. It was after about one year that they found unexpectedly that these additional innovations had been officially abandoned.

According to Lin (2007), the innovation response decisions have "affective factors" such as stress, fear, doubts, frustration, pain etc. (p. 179). Similarly, SBS journalists experienced such stress, fear and pain.

> Whenever journalists encountered system crashes, such as losing frames, which they had edited for more than one hour, they experienced unbearable pain. In particular, one or two of the staff of the editing unit were in mortal fear of system crashes when they operated new bulletins because almost every day broadcasting accidents occurred and they had to submit a written explanation to their bosses, which exerted a baneful influence upon their careers (SR8, interviewed on 14 September 2007).

These circumstances led to huge resistance, postponement and partial use, but not to rejection and sabotage. Such responses might be caused by the fact that SBS journalists had no choice but to adopt the project, because it was a mandated innovation decision.

> We were forced to accept the adoption and had received oral threats from a few members of the project team. Obviously, they had been oppressive from the start (SR8, interviewed on 14 September 2007).

One way to cope with the inherent uncertainty about an innovation's consequences is to try out the new idea on a partial basis. Most individuals do not adopt an innovation without first trying it on a probationary basis to determine its usefulness in their own situation. This small-scale trial is often an important part of the decision to adopt (Rogers, 2003, p. 177). SBS journalists thought that they were not provided with enough opportunities to try NDS, whereas the project team insisted that they were offered sufficient chances to try the new system. Regarding the SBS journalists' attitude about the company's policy, no one usually argued against it; at the same time they were unwilling to discuss problems with their bosses for fear of creating a bad impression.

Korean journalists rarely express themselves and hardly ever interfere where they are not wanted because they know very well that creating an unfavourable impression with their bosses will be detrimental to their interests. According to Sa (2009), Korean journalists are compelled to follow the opinions of the media owners. When journalists disregard the directives of owners or managers, "the journalists may be fired" (p. 8).

> What made it difficult for us was journalists' behaviour. They remained mute and silent when we carried out the analysis of jobs, even when we asked them to try the new system. Hundreds of training classes and courses came to nothing. They just attended the classes because it was the CEO's decision to make all the employees attend. However, they always complained when they went to their job. Both system instability and the unskillfulness of journalists aggravated the situation (IT4, interviewed on 26 July 2007).

The trial of a new idea by a peer can substitute, at least in part, for the individual's trial of an innovation, at least for some individuals and for some innovations. This "trial by others" provides a vicarious trial for an individual. Change agents often try to speed up the innovation-decision process for individuals by sponsoring demonstrations of a new idea in a social system. A demonstration can be quite effective in speeding up the diffusion process, especially if the demonstrator is an opinion leader (Rogers, 2003, p. 177). Unfortunately, the SBS project team did not use this strategy, focusing rather on offering the training classes.

There were several reasons why SBS journalists opposed the NDS project: Firstly, they thought they would serve as guinea pigs for a risky and experimental project. Secondly, the project team's oppressive behaviour made journalists feel disillusioned with the project. Thirdly, there was a lack of consensus about the necessity of introducing the digital news production system. And finally, SBS journalists thought the project might threaten their job security in the near future.

5.1.4 The implementation stage: additional innovations caused resistance

Implementation occurs when an individual (or other decision-making unit) puts an innovation into use. Until the implementation stage, the innovation-decision process has been a strictly mental exercise of thinking and deciding. However, implementation

involves overt behaviour change as the new idea is actually put into practice. According to Rogers (2003), it is one thing for an individual to decide to adopt a new idea, to put the innovation into use is "quite a different thing" (p. 179), and implementation frequently follows the decision stage, rather directly.

Although the decision to adopt has been made in the past, at the implementation stage, a certain amount of uncertainty about the expected results of the innovation still exists for the typical individual. Consequently active information seeking usually takes place at the implementation stage in order to eliminate this uncertainty. Here the role of change agents is, as Rogers (2005) observes, essentially to supply "technical assistance to the client" (p. 179) as he or she begins to utilise the innovation.

On the other hand, Rogers (2003) notes that when the adopter is an organisation rather than an individual, "problems of implementation are usually more serious" (p. 179), since in organisational settings, many individuals frequently participate in the innovation-decision process and "the implementers are often a different set of people from the decision makers" (p. 179). Rogers (2003) adds that the organisational structure that gives stability and continuity to an organisation may be an obstacle to the implementation of an innovation.

Depending on the nature of the innovation, the implementation stage may, as Rogers (2003) notes, continue for a lengthy period of time. However, when a point is reached at which "the new idea becomes institutionalised as a regularised part of an adopter's ongoing operations" (p. 180), the innovation loses its characteristic quality as the distinct identity of the new idea vanishes. For many individuals, this point is regarded as the end of the implementation stage and may also mean the termination of the innovation-decision process. On the other hand, Kamal (2006, p. 194) insists that although, in the implementation stage, the organisation decides to purchase and make use of the innovation technology, this organisational adoption decision only indicates "the beginning of the actual implementation of an innovation" (p. 194), because from this point onwards, acceptance or assimilation within the organisation becomes important.

Reinvention

According to Rogers (2003), who defined "reinvention" (see Section 2.5.3), the antonym of reinvention is "fidelity." The SBS project team, and in particular, the head of the project, Lee Sun-myung, wanted to promote the project with great "fidelity" to his original ideas. However, after his ideas met with fierce resistance from SBS journalists, all of the original goals except newsroom digitalisation were abandoned in the end. To put it concretely, the two out of the three main goals that were abandoned were multi-skilling practices and newsroom convergence (see Table 4.2). In addition, the four minor goals relinquished (see Table 4.3) were; redefining existing job descriptions, establishing the Command Room, introducing the Information Support Centre, and employing the GPS system.

Multi-skilling practice and newsroom convergence was not even tried, because SBS journalists' determined resistance to the minor goals of the Command Room, the Information Support Centre, and the GPS decisively discouraged the project team from attempting to persuade end-users to introduce these innovations. In particular, the newly designed job descriptions of editors and deputy editors also encountered strenuous objections from all ranks of journalists in the newsroom because they found them unreasonable and irrational.

In addition, journalists were not able to understand why they had a duplicated command system, which embarrassed them. In a similar context, establishing the Information Support Centre was abandoned since it caused the most serious resistance from journalists who were forced to share tables instead of using their own desks, which were removed by the project team. Finally, the GPS was abandoned as it caused a human rights problem by allowing the management to watch all staff members' activities during their newsgathering. In the end, newsroom digitalisation in terms of mechanical and technological innovation was the only innovation implemented, and all the other goals initially planned were discarded completely or returned to the previous state.

Regarding the GPS system, in response to the statement: "It was the right choice for SBS to fit each car with the GPS system in 2004", almost two-thirds of journalists

(62.6%) disagreed with the statement, whereas less than one-fifth (19%) agreed (Table 5. 3).

Table 5.3 It was the right choice for SBS to fit each car with the GPS system in 2004.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
4	15	27	44	33	123*

*Two respondents did not answer this question.

With regard to age, the age of respondents had little effect on their response; almost two-thirds of those aged under 40 (63.7%) and those aged 40 or over (61.5%) disagreed with the statement (Table 5.4).

Table 5.4 It was the right choice for SBS to fit each car with the GPS system in 2004.

Age	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
Under 40	0	7	14	16	21	58
40 or over	4	8	13	28	12	65
Total	4	15	27	44	33	123*

*Two respondents did not answer this question.

With regard to the respondent's position, almost two-thirds of sub-deputy and deputy editors (65.5%) disagreed with the statement, followed by ordinary reporters (63.2%) while only half of senior editors (50%) disagreed (Table 5.5).

Table 5.5 It was the right choice for SBS to fit each car with the GPS system in 2004.

Position	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
Reporters	0	8	10	14	17	49
Sub-Deputy & Deputy Editors	3	5	12	24	14	58
Senior Editors	1	2	5	6	2	16
Total	4	15	27	44	33	123*

*Two respondents did not answer this question.

5.1.5 Confirmation stage: some journalists reversed their decision to adopt the project.

Confirmation at the individual level is aimed at providing an explanation for the individual decision to adopt and implement an innovation, whereas clarifying is intended to intensify understanding of the organisational innovation. Rogers (2003. p. 189) also observed that at the confirmation stage the individual seeks reinforcement of

his adoption or rejection decision already made and may reverse this decision if exposed to conflicting messages about the innovation. He also noted that at the confirmation stage the individual seeks to avoid a state of dissonance or to reduce it if it occurs (p. 189). Most SBS journalists were exposed to conflicting messages such as that of NDS's instability. Furthermore, they really experienced frequent system crashes when they produced their news stories. As a result, many of them changed their attitudes and some of them reversed their decision to adopt NDS.

With the series of events mentioned above, most SBS journalists were not able to put up with such dissonance, which Rogers (2003) defined as, "an uncomfortable state of mind that an individual seeks to reduce or eliminate" (p. 189). In the case of innovative behaviour, this reduction of dissonance may occur after the innovation-decision to implement an innovation when the individual secures further information that persuades him or her that he or she should not have adopted. In the questionnaire in this study, almost three-quarters of journalists (73.6%) disagreed with the statement "Establishing the Command Room was a realistic idea" (Table 5.6).

Table 5.6 Establishing the command room was a realistic idea.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
1	8	24	61	31	125

With regard to the age of respondents there was little difference; exactly three-quarters of those aged under 40 (75%) and slightly less than three-quarters of those aged 40 or over (72.3%) disagreed with the statement (Table 5.7).

Table 5.7 Establishing the command room was a realistic idea.

Age	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
Under 40	0	4	11	30	15	60
40 or over	1	4	13	31	16	65
Total	1	8	24	61	31	125

In terms of respondent's position, more than three-quarters of sub-deputy and deputy editors (77.9%) and almost three-quarters of ordinary reporters (72%) disagreed with the statement, while almost two-thirds of senior editors (62.5%) disagreed with the statement (Table 5.8).

Table 5.8 Establishing the command room was a realistic idea.

Position	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
Reporters	0	4	10	24	12	50
Sub-Deputy & Deputy Editors	0	2	11	30	16	59
Senior Editors	1	2	3	7	3	16
Total	1	8	24	61	31	125

In terms of the period of employment, almost four-fifths of the journalists who had worked for from 11 years to 15 years (79.5%), nearly three-quarters of those who had worked for 10 years or less (74.2%), and slightly more than two-thirds of those who had worked for 16 years or more (67.3%) disagreed with the statement (Table 5.9).

Table 5.9 Establishing the command room was a realistic idea.

Period of employment	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
10 years or fewer	0	2	7	17	9	35
11 to15 years	0	2	7	25	10	44
16 years & more	1	4	10	19	12	46
Total	1	8	24	61	31	125

Two types of discontinuance are: (1) replacement and (2) disenchantment (see Section 2.5.3). Such dissatisfaction may come about because the innovation is inappropriate for the individual and does not result in perceived relative advantage over alternatives (Rogers, 2003, p. 190). SBS journalists were initially unenthusiastic about adopting NDS, because they were forced into it. In particular, the project team's promotion of the innovation was accompanied by thinly veiled threats of redundancies if anyone refused to accept it. SBS journalists had a feeling of dissonance about why SBS should run the risk of implementing new technology, which had never yet demonstrated its stability.

5.2 Perceived attributes of innovation

According to Rogers (2003), the rate of adoption of an innovation can be mainly explained by its perceived attributes: "49 to 87 percent of the variance in the rate of adoption is explained by five perceived innovation attributes: relative advantage, compatibility, complexity, trialability and observability" (p. 221). These five attributes are not necessarily employed all together in all studies. In this context, the

researcher found that both observability and trialability were hardly relevant to the study. However, in this study, all of these five attributes were employed so as to use Rogers' theory as much as possible in order to test its capacity to explain the complex phenomena occurring in a TV newsroom.

5.2.1 Relative advantage: good for journalists' careers

Rogers (2003) defines relative advantage as "the degree to which an innovation is perceived as being better than the idea it supersedes" (p. 229). He also refers to relative advantage as "the ratio of the expected benefits and the costs of adoption of an innovation" and notes that relative advantage has been regarded by diffusion researchers as one of the strongest predictors of an innovation's rate of adoption (p. 233). Relative advantage has several sub-dimensions: (a) economic profitability, (b) low initial cost, (c) a decrease in discomfort, (d) social prestige, (e) a saving of time and effort, and (f) immediacy of reward (Rogers, 2003, p. 233).

Regarding the relative advantage of economic profitability, in fact, newsroom digitalisation had nothing to do with the economic profitability of SBS journalists. However, they were worried about the project because they thought SBS had invested in the wrong area, regarding SBS as a small company in terms of size and funding capacity compared with KBS and MBC, their competitors. Some of them viewed themselves as "guinea pigs" of the experimental project by SBS. In other words, they were not able to understand why SBS should have been the pioneer of a risky project: even the bigger KBS and MBC were just watching and waiting. For SBS journalists, the digitalisation project was far from superseding the existing idea, that is, the analogue news production system.

In order to promote an innovation, as Soroka and Jakovi (2004) observed, the change agency should explain "the benefits of the innovation" and affect prospective users' perceptions about it (p. 3). However, as far as economic profitability was concerned, there was nothing to appeal to the SBS journalists. By contrast, they had a suspicion that the management had tried to promote the project for cost-cutting reasons by sacrificing the value of journalism. One journalist stated: "Most of SBS journalists were dubious about the company's intentions. We thought that the management was

trying to promote the project which seemed undoubtedly to be designed only for reducing the budget and in the long run, to cut personnel on a large scale" (JR7, interviewed on 10 July 2007).

Most SBS journalists perceived the digital TV news production system as being good for their careers. According to the outcome of the questionnaire survey in this study (Table 5.10), more than half of respondents (60.5%) agreed with the statement that "Working in a digitalised newsroom environment is good for my career."

Table 5.10 Working in a digitalised newsroom environment is good for my career.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
13	62	38	9	2	124*

*One respondent did not answer this question.

In terms of age, the age of respondents made no difference. More than half of those aged 40 or over (60.9%) agreed with the statement "Working in a digitalised newsroom environment is good for my career." In the same way, more than half of those aged under 40 (60%) also agreed with the statement (Table 5.11).

Table 5.11 Working in a digitalised newsroom environment is good for my career.

Age	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
Under 40	2	34	16	7	1	60
40 or over	11	28	22	2	1	64
Total	13	62	38	9	2	124*

*One respondent did not answer this question.

In terms of the respondent's position, almost two-thirds of sub-deputy and deputy editors (65.5%), and more than half of senior editors (56.2%) and reporters (56%) agreed with the statement (Table 5.12).

Table 5.12 Working in a digitalised newsroom environment is good for my career.

Position	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
Reporters	2	26	15	6	1	50
Sub-Deputy & Deputy Editors	6	32	18	1	1	58
Senior Editors	5	4	5	2	1	16
Total	13	62	38	9	2	124*

*One respondent did not answer this question.

Nevertheless, in the in-depth interviews, this researcher found that they did not have a clear idea why the system would be helpful for their future. A journalist who disagreed with the supposed advantage of the digital news production system noted that:

> After digitalisation, nothing has changed greatly. Currently if we edit our stories ourselves using the nonlinear editing system, we could say we have a specific and special ability for our career. In my view, with only some superficial knowledge about the nonlinear editing, the NDS system has nothing to do with having a good journalistic career (SR1, interviewed on 11 July 2007).

With regard to the initial cost of an innovation, which may affect its rate of adoption (Rogers, 2003, p. 230), the SBS journalists thought that the initial cost of the NDS project was too high, even though the cost was not an issue for journalists but for the management. However, the enormous cost led the journalists to be more negative about the project.

> From the start, a considerable number of journalists were opposed to the NDS project. They thought there would be little possibility of success in the project, and SBS could have lost a huge amount of money invested in the project. Furthermore, they could hardly understand why SBS attempted to be a guinea pig of state-of-the-art digital technology, which had never been tested in the world (SR2, interviewed on 8 July 2007).

The majority of journalists considered cost to be an important factor in deciding on the adoption of the TV news production system especially in TV stations with fewer resources, like SBS, compared with KBS or MBC, the largest networks in Korea. When making the adoption decision, cost is critical enough to be examined separately, instead of treating it as a subset under relative advantage (Moore and Benbasat, 1991). Additionally, as digital technology advances at a great speed and standards are changed, these early adopters were quite worried about sustainability issues (IT1, interviewed on 2 August 2007). Most of the journalists were concerned about how long the digital news production system, even with minor changes, could be used for future operation before it became obsolete.

> For nearly a year, SBS journalists suffered the discomfort caused by the technical instability of the new digital systems. In the case of the text system for writing news stories, NRCS, which was developed by the SBS project team, did not work very well, compared with the Notes systems used previously. In addition, the transmission system frequently crashed. News directors in the control room yelled whenever they encountered system crashes (SR10, interviewed 2 August 2007).

Encountering technical problems is almost inevitable when a new technical system is introduced. Spanish broadcasting companies also experienced system crashes. According to Avles and Leon (2002, p. 360), in September 1998, on the very first day of Tele 5's newsroom digitalisation, the screen which shows all the items to be broadcast went black, just three minutes before one of the daily news programmes was due to go on air. Furthermore, one of several technical problems Antena 3 confronted arose when a technical communication failure made the computing network break down. Consequently, some edited material could not be retrieved from the system and had to be edited again.

Even though both SBS and Spanish broadcasting companies experienced technical problems, the ways they dealt with them were different. SBS's system crashes led to fierce resistance, whereas the Spanish newsrooms operated the new digital news production system relatively smoothly between their implementation which involved testing all software offline, building in backups, maintaining the analogue technology until the new one was fully working and having technical managers ready to deal with any problems as soon as they arose (Aviles and Leon, 2002, p. 360).

Concerning the relative advantage of social status, some SBS journalists had a sense of their own superiority to other broadcasting companies. In other words, newsroom digitalisation, they thought, gave them social status, which Rogers (2003) identifies as one factor that motivates individuals to adopt new technologies (p. 230).

> I felt we were better than our competitors because we had the digital news production system, which our competitors did not have, and they felt envious of our systems (JR1, interviewed 10 July 2007).

> We felt a sense of superiority over competitors such as KBS and MBC when only we were able to send the file of journalists' voice-overs through the Internet. It meant that we had an advantage in editing pictures better than other broadcasting companies (CC1, interviewed on 12 September 2007).

Almost three-quarters of respondents (72.8%) agreed with the statement that "The digital news production system was helpful in competing with journalists of the other broadcasting companies, such as KBS and MBC" (Table 5.13). However, some SBS journalists thought that no matter how much strength the new system had, it did not make SBS journalists superior to their competitors (JR3, interviewed on 24 August 2007).

Table 5.13 The digital news production system was helpful in competing with journalists of the other broadcasting companies, such as KBS and MBC.

Strongly agree	Agree	Neutral	Disagree	Total
14	77	27	7	125

In a certain sense, SBS journalists regarded the NDS project as a preventive innovation, which Rogers (2003) defines as "a new idea that an individual adopts now in order to lower the probability of some unwanted future event" (p. 233). Stopping smoking, using car seat belts and being screened for breast cancer are examples provided by Rogers (2003, p. 233).

The relative advantage of preventive innovation is difficult for change agents to demonstrate to their clients, because the advantages occur at some future and unknown time and may not happen at all. Thus, the relative advantage of preventive innovation is highly uncertain (Rogers, 2003, p. 233). "Much more than financial incentives will be necessary to obtain a widespread and rapid adoption of improved practices" (Rogers, 2003, p. 234). This type of innovation has a particularly slow rate of adoption because individuals have difficulties in perceiving its relative advantage (Rogers, 2003, p. 234).

> Originally, NDS was not a preventive innovation, however, most journalists perceived it as a preventive one, which they did not feel was a necessary innovation (JR3, interviewed on 24 August 2007).

Regarding the relative advantage of time and effort saving, one senior journalist said that "after newsroom digitalisation, the process of news production has become faster and easier. When I am pressed for time to meet the deadline for bulletins, I can manage to finish editing, which is far from how it used to be" (JR5, interviewed on 22 June 2007). An Editor noted: "The amount we have to move became minimised thanks to the new system, subsequently we can save the time and energy" (SR12, interviewed on 11 July 2007). In particular, a presenter of the flagship bulletin, the 8 o'clock News, said during the in-depth interview with the researcher, at around 7 o'clock in the evening, that what made it possible for him to spend time giving an interview at this time was the digitalised system.

> Before digitalisation, the presenters had limited time around 6 o'clock to write the presenters' headlines for news stories handed in by journalists. However, these days, presenters can access all the stories through the networked system, and write headlines for each story. Subsequently, most editors do not revise journalists' headlines because they think presenters are doing it (SR13, interviewed on 13 September 2007).

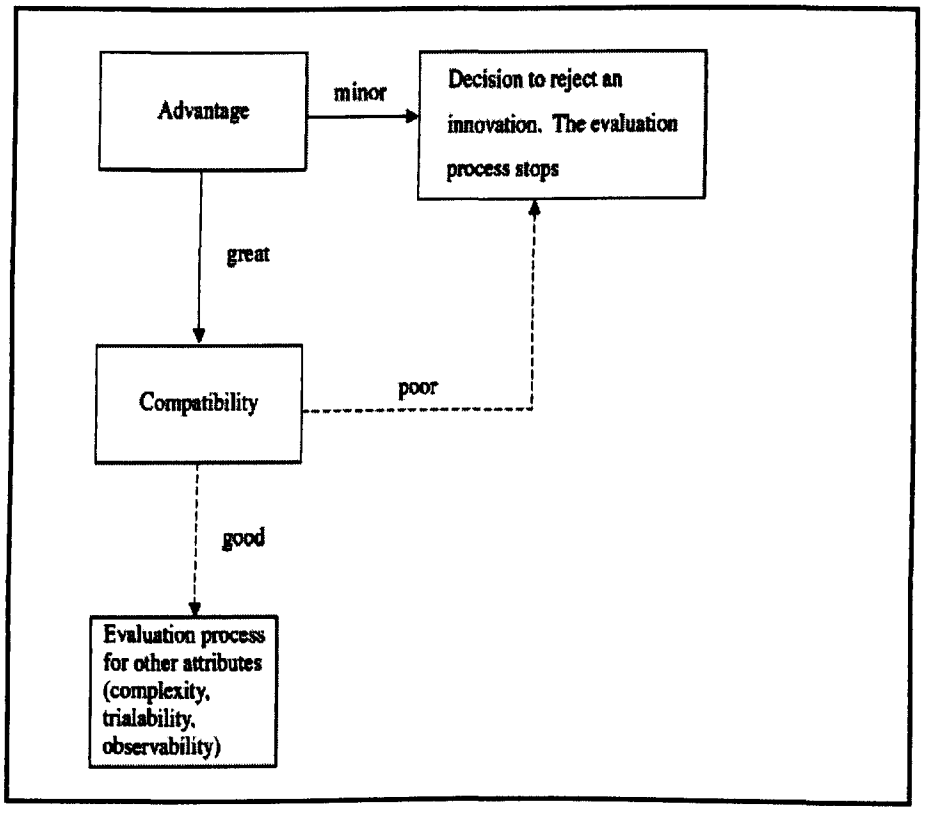
Immediacy of reward, or rather lack of it, is a factor which explains in part why preventive innovations that lack immediate rewards generally have an especially slow rate of adoption (Rogers, 2003, p. 233). SBS did not have any plan to promote the innovation by rewarding journalists who participated enthusiastically in the newsroom digitalisation project. Although, in 2006, the then Editor-in-Chief provided rewards for journalists who enthusiastically wrote columns for the SBS news website, SBS did not reward them for active participation in the digitalisation project. This indicates that the middle managers expected all journalists to become enthusiastic in their support for the project without any immediate reward.

5.2.2 Compatibility: the project team failed in determining "felt needs"

Compatibility is defined as the degree to which an innovation is perceived as consistent with the existing values, past experiences and needs of potential adopters (Rogers, 2003, p. 240). Assessing the relative ability of the innovation attributes to predict the intention to adopt an innovation, Vollink et al. (2002, p. 335) suggested the stepwise model of the evaluation of innovations (Figure 5.1). In this model, they

hypothesised that change agents are above all interested in the relative advantage (like the cost-effectiveness) of an innovation, and in a second step, an innovation would be judged on its compatibility with the existing structure. The model of Vollink et al. (2002) illustrates how compatibility is an important factor in implementing an innovation.

Figure 5.1 Model of the Evaluation of Innovation



Returning to Rogers' (2003, p. 240) theory, an idea that is more compatible is less uncertain to the potential adopter and fits more closely with the individual's situation. Such compatibility helps the individual give meaning to the new idea so that it is regarded as more familiar, and an innovation can be compatible or incompatible with (a) socio-cultural values and beliefs, (b) previously introduced ideas and/or (c) client needs for the innovation.

In regard to socio-cultural values and beliefs, SBS journalists thought that picture editing should be the job of craft editors, because they were not labourers with simple skills who were merely able to edit pictures, but journalists who write significant news stories. An innovation may be compatible not only with deeply embedded cultural values but also with previously adopted ideas. The compatibility of an

innovation with a preceding idea can either speed up or retard its rate of adoption. Old ideas are the main mental tools that individuals utilise to assess new ideas and give them meaning. Individuals cannot deal with an innovation except on the basis of the familiar. Previous practice provides a standard against which an innovation can be interpreted, thus decreasing its uncertainty. Subsequently, an innovation's incompatibility with cultural values can block its adoption. Traditionally, under the overwhelming influence of Confucian teachings, Korean people regard technicians as men of humble station. Accordingly, the journalists of SBS were inclined to be unenthusiastic about doing self-editing due to these traditional teachings, which stipulate the four classes of social status according to occupation: the highest one is the scholars, the second farmers, the second lowest is industrial workers (artisans), and the lowest is mercantile classes (tradesmen).

Regarding previously introduced ideas, SBS journalists had experienced several innovations attempted by the management, including the news producer system, which copied the US TV journalistic system and was soon abandoned. According to this scheme, journalists were divided into two groups, that is, broadcasting groups who were responsible for reporting on air and assistant producer groups who were in charge of newsgathering and writing the stories. Consequently, the perception of NDS developed by SBS journalists was pessimistic and antipathetic. They thought the project had few relative advantages and they regarded it as not compatible with their existing work practices. In this case, the experience of a failed idea led to negative consequences.

According to Rogers (2003), the nature of the old idea that is replaced by the new idea influences the rate of adoption of a new idea. He insists that "the more compatible an innovation is, the less of a change in behaviour it represents" (p. 245). He emphasised the usefulness of introducing a very highly compatible innovation, which can prepare the way for further less compatible innovations. This can be perceived as "the first step in a cluster of innovations" (p. 245) that are to be implemented successfully. By contrast, the SBS project team failed to select a compatible innovation as the opening stage in a number of NDS innovations because the earlier initiatives, such as establishing the Command Room and removing personal desks, were entirely incongruent with existing routines (see Chapter 5, Tables 5.6, 5.7, 5.8, and 5.9).

A negative experience with one innovation can damn the adoption of future innovations. Innovation negativism is the degree to which the failure of an innovation conditions a potential adopter to reject future innovations. When one idea fails, potential adopters are conditioned to view all future innovations with apprehension. For this reason, change agents should begin their efforts with an innovation that has a high degree of relative advantage, so that they can then build on this initial success with innovations that are compatible with the pioneering new idea (Rogers, 2003, pp. 245-246).

The NDS project team did not begin their efforts with an innovation that had a high degree of relative advantage. They attempted to implement NDS with other innovations such as the desk sharing system and installing the Command Room, which were incompatible with established traditions. Consequently, they were not able to succeed in the end. Two journalists criticised the project team as too clumsy and awkward in employing strategies to promote the innovations.

Concerning a client's need for the innovation, Rogers (2003) states "one indication of the compatibility of an innovation is the degree to which it meets a felt need" (p. 246). Although change agents endeavour to determine the needs of their clients and then to recommend innovations that satisfy these needs, determining felt needs is not a straightforward matter, as Rogers (2003) observes, because change agents must have a "high degree of empathy and rapport" with their clients in order to measure their needs precisely (Rogers, 2003, p. 246).

In the case of SBS, unfortunately, the project team was not successful in determining "felt needs." An SBS Editor, who wrote a book about newsroom innovation in 2007, said that "even the project team seemed to lack understanding about the exact conception of the newsroom digitalisation" (SR4, interviewed on 23 July 2007).

5.2.3 Complexity: difficult to learn how to use the new system

Rogers (2003) refers to complexity as "the degree to which an innovation is perceived as relatively difficult to understand and use" (p. 257). Any new idea may be classified on the complexity–simplicity continuum, and some innovations are clear in their meaning to potential adopters while others are not. The complexity of an innovation which is negatively connected to its rate of adoption may be "a very important barrier to adoption," in particular, for some new ideas (Rogers, 2003, p. 257).

Kamal (2006) also argues that "a high level of technological complexity can have a negative impact on IT innovation adoption in government organisations" (p. 211). In particular, complexity impedes adoption of innovation because it builds barriers against diffusion efforts. Noting that some technologies place a considerable knowledge burden on would-be adopters, Fichman (1992) maintains that in environments where "knowledge barriers" (p. 6) are high the more significant issue can be an adopter's ability to adopt.

> Compared with the world renowned Notes system, which before digitalisation we had used for text writing, the SBS's own system, NRCS was complex and inconvenient. Furthermore, self editing was too difficult to do with only several hours of training, because the functions of the nonlinear editing system were too diverse and very sophisticated (SR3, interviewed on 1 July 2007).

In particular, SBS journalists felt that it was difficult to learn how to use the new systems, which were complicated and lacked ease of use.

> In the beginning, journalists tried to edit their own stories, however, they found the system had a significant weakness, that is, the speed of data flow was too slow to support self editing by journalists. Therefore, they used the system limitedly, for example, editing their voice recording. Finally, they gave up picture editing completely (JR3, interviewed on 24 August 2007).

5.2.4 Trialability: shifting the responsibility for providing enough trial opportunities onto each other

Rogers (2003) defines trialability as "the degree to which an innovation technology may be experimented with on a limited basis" (p. 258) before making an adoption (or rejection) decision. New ideas that can be tried are generally adopted more rapidly than innovations that are not divisible, and some innovations are more difficult to divide for trial than are others. A personal trial can dispel uncertainty about a new idea.

The trialability of an innovation, as perceived by the members of a social system, is positively related to its rate of adoption. Lakhanpal (1994) observes that users who are satisfied with the training they receive are inclined to "have a more positive 'trial' experience and would consequently be more likely to use" (p. 43) the innovations, whereas users who are dissatisfied with the training are inclined to have a less positive "trial" experience and would be less inclined to use innovations. If an innovation can be designed to be tried more easily, it will have a more rapid rate of adoption.

Trying a new idea may involve reinventing it so as to customise it more closely to the individual's conditions. Therefore, an innovation may actually be changed during the trial (Rogers, 2003, p. 258). However, in the case of SBS, both parties – the SBS project team and the journalists – shifted the responsibility for providing enough trial opportunities onto each other. The project team insisted that although the journalists were provided with opportunities to try the system, "they passed up those chances. And later, when the system was implemented, they complained that they were poorly trained" (IT4, interviewed on 26 July 2007). By contrast, a journalist blamed the lack of time for trying, saying that "we did not have enough time to try. The digital system was too complicated to learn in a short time" (JR3, interviewed on 24 August 2007).

More than half the journalists (56.4%) agreed with the statement that "Even though I had training in digitalisation, I still felt I did not have enough time to try it," whereas just slightly more than one-fifth (20.9%) disagreed (Table 5.14).

Table 5.14 Even though I had training in digitalisation, I still felt I did not have enough time to try it.

Strongly agree	agree	Neutral	Disagree	Strongly disagree	Total
4	66	28	23	3	124*

*One respondent did not answer this question.

With regard to age, Table 5.15 shows that more than half of those aged 40 or over (56.9%) and under 40 (55.9%) agreed with the statement.

Table 5.15 Even though I had training in digitalisation, I still felt I did not have enough time to try it.

Age	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
Under 40	3	30	14	11	1	59
40 or over	1	36	14	12	2	65
Total	4	66	28	23	3	124*

*One respondent did not answer this question.

In terms of the respondent's position, almost two-thirds of senior editors (62.5%) and sub-deputy and deputy editors (61.0%) agreed with the statement, whereas less than half of ordinary reporters (48.9%) agreed with the statement (Table 5.16).

Table 5.16 Even though I had training on digitalisation, I still felt I did not have enough time to try it.

Position	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
Reporters	1	23	14	11	0	49
Sub-Deputy & Deputy Editors	3	33	13	8	2	59
Senior Editors	0	10	1	4	1	16
Total	4	66	28	23	3	124*

*One respondent did not answer this question.

5.2.5 Observability: lack of interest in learning how to use the new system

Rogers (2003) defines observability as "the degree to which the results of an innovation are visible to others" (p. 258), and notes that all innovations differ in the degree of observability, which is positively related to rate of adoption. Compared with the hardware component of technological innovation, the software component is not as apparent to observation, so innovations in which the software aspect is dominant possess less observability and generally have a comparatively slower rate of adoption (Rogers, 2003, pp. 258-259). Regarding observability, while

SBS journalists were provided with several opportunities to observe how the new digital systems worked, they did not feel interested in learning how they were operated.

> Basically, SBS journalists did not understand why they should attend the class to train them because they did not want the new systems. They wanted the status quo and to use the existing systems as long as possible which, they thought, had had no problems since those were introduced in 1990. Especially, they regarded the training classes as annoying, because they were too busy making news stories from day to day (JR9, interviewed on 20 July 2007).

5.3 Type of innovation decision: an authority innovation decision

Innovations can be adopted or rejected (1) by an individual member of a system or (2) by the entire social system, which can decide to adopt an innovation by a collective or an authority decision (Rogers, 2003, p. 28). Rogers (2003) categorises three main types of innovation decisions: (1) Optional innovation decisions – choices to adopt or reject an innovation that are made by the individual independent of the decisions of other members of the system; (2) Collective innovation decisions – choices to adopt or reject an innovation that are made by consensus among the members of a system, and (3) Authority innovation decisions – choices to adopt or reject an innovation that are made by relatively few individuals in a system who possess power, status or technical expertise.

SBS's project was neither an optional innovation decision, which is mainly to be applied to the behaviour of consumers and farmers, nor a collective innovation decision. The project was initiated by the Chairman of the SBS group, Yoon Se-young. Consequently, SBS's innovation decision might be regarded as an authority innovation decision. However, the company's adoption process is one thing, and the adoption process of individual journalists is another.

To understand the process of SBS's innovations more accurately, we have to distinguish the main goal from the additional goals. Among SBS's innovations, implementation of the digital news production system was the main target, whereas

several measures were additional, which included establishing a Command Room, and the shared desk system.

SBS's decision process for the main goal, that is the digital news production system, was an authority innovation decision, whereas additional innovations might be regarded to a certain extent as optional innovation decisions. In other words, although, adopting the main goal was compulsory, the project team left room for journalists' choice of adopting additional innovations. In the beginning, the attitude towards the additional innovations was that they were as compulsory as that of the main goal.

SBS's implementation of the digital news production system was an authority innovation decision and this is why the researcher examined the process of innovation with the model of both the organisational level and the individual level shown in the previous chapter. As stated in chapter 2, Rogers' five-stage model of innovation implementation in organisations; agenda-setting, matching, redefinition/restructuring, clarifying and routinising (Rogers, 2003, chapter 10) differs from his model of individual innovation adoption. The stages of the individual adoption model are; knowledge, persuasion, decision, implementation and confirmation (Rogers, 2003, chapter 5).

One of the most expensive mistakes, for which the SBS project team paid a price, was that they concentrated on meeting a strict and demanding adoption schedule and neglected the importance of the individual adoption by the journalists. The neglect of the aspect of individual adoption caused problems for the project team, such as indifference and resistance to all the innovations including the digital news production system and additional innovations like establishing a Command Room and introducing the shared desk system. Furthermore, the resistance led to abolishing the Command Room, and finally, "the project team had to spend money amounting to one hundred and fifty million Korean Won (approximately seventy-five thousand GBP) wastefully to build and then dismantle it" (IT1, interviewed on 26 July 2007). Whereas various internal interactions between or within divisions or sections of organisations entail the process of intra-organisational acceptance, the project team was most concerned about the ultimate objective, namely, introducing the new system by the tight deadline set by the management. As stated in detail in chapter 4, the continued conflicts between and

within divisions or sections of SBS were serious for several months of the initial stage of implementation in 2004.

Regarding the advantage of authority innovation decisions, Rogers (2003) noted that "Innovations requiring an individual-optional innovation decision are generally adopted more rapidly than when an innovation is adopted by an organisation" and "the more persons involved in making an innovation-decision, the slower the rate of adoption" (p. 221). SBS was such a case. Their innovations were adopted quickly in terms of the organisational adoption, whereas they experienced resistance in terms of the indifference and resistance of the persons involved.

5.4 Communication channels: the importance of the interpersonal channel

The formation and change of strongly held attitudes, as Rogers (2003, p. 205) observes, is accomplished mainly by interpersonal channels, which involve a face-to-face exchange between two or more individuals. However, the SBS project team's behaviours clearly showed a lack of knowledge about the importance of interpersonal channels. In fact, the team did not understand that these channels are the most useful to cope with resistance or apathy on the part of an individual journalist. Accordingly they employed interpersonal channels to a limited extent.

> One day the project team burst on the scene, and compelled us to adopt the digital news production system. In the training classes, they told us that digitalisation was the only course open to us, and it was a highway to success of both SBS and all the journalists. Therefore we should comply with their requests. They should have devoted themselves to persuading us personally, because no one likes a change in working practices (JR7, interviewed on 10 July 2007).

> Regarding the criticism that the project team were oppressive, we were not able to ask journalists' opinions about the NDS project. Actually, we tried to meet as many journalists as possible, and ask for their advice and support. However, since we were pressed for time, the number of the journalists with whom we met one-to-one was no more than twenty. We thought we were a taskforce, therefore, we were entitled to expect that they would participate actively in the project without persuading them face to face (IT4, interviewed on 26 July 2007).

According to Rogers' (2003) diffusion theory, in deciding whether to adopt an innovation, most people do not rely on the scientific studies of its results, but depend mainly on subjective evaluations by "other individuals like themselves" (Rogers, 2003, pp. 18-19). In the same way, what was able to make SBS journalists share the common sentiment that newsroom digitalisation was a good idea was interpersonal communication. However, the SBS project team failed to arouse universal sentiments about newsroom digitalisation. More than two-thirds of respondents (68.3%) disagreed with the statement that "The SBS project team accepted enough opinions from the journalists", while only 4% of journalists agreed (Table 5.17).

Table 5.17 The SBS project team accepted enough opinions from the journalists.

Agree	Neutral	Disagree	Strongly disagree	Total
5	34	70	14	123*

*Two respondents did not answer this question.

In terms of the respondent's position, more than three-quarters of sub-deputy and deputy editors (76.2%), almost two-thirds of reporters (62.5%) and more than half of senior editors (56.2%) disagreed with the statement (Table 5.18).

Table 5.18 The SBS project team accepted enough opinions from the journalists.

Position	Agree	Neutral	Disagree	Strongly disagree	Total
Reporters	2	16	25	5	48
Sub-Deputy & Deputy Editors	1	13	38	7	59
Senior Editors	2	5	7	2	16
Total	5	34	70	14	123*

*Two respondents did not answer this question.

SBS's case supports the findings of Singer (2004). In her study of newsroom convergence in four American newsrooms, she found the practically universal sentiment that convergence works best as a one-to-one process – that the relationships essential for people with diverse backgrounds and skills not only to work together but also to depend on one another "can develop only through interpersonal communication" (p. 13).

Mass media channels are relatively more important at the knowledge stage and interpersonal channels are relatively more important at the persuasion stage in the

innovation-decision process (Rogers, 2003, p. 205). The NDS project team did not know how important the interpersonal channel was and consequently, they were not able to cope with the fierce resistance of the journalists to the innovation, in particular, establishing the Command Room and replacing SBS journalists' personal desks with large tables for common use.

Rogers (2003) suggested that the use of the mass media gave "the greatest thrust out from the knowledge stage" (p. 206), while interpersonal channels were significant in moving individuals out of the persuasion stage. He also maintained that later adoption of the new idea by an individual was caused by employing a communication channel that was unsuitable to a given stage in the innovation-decision process (such as an interpersonal channel at the knowledge stage) because use of such a channel postponed progress through the innovation-decision process. Considering the importance of choosing a communication channel as shown above, SBS's strategy was not so effective when compared with successful innovation projects. For example, according to Singer (2004), the newsroom managers in her research sites in the US "have sought to foster an environment in which journalists make optional and/or collective innovation-decisions to implement digitalisation, using the interpersonal communication channels already discussed" (p. 15).

On the other hand, Rogers (2003) considers that the Internet functions both in mass media ways and in interpersonal ways. He suggests that the Internet makes individuals contact many other people "in a one-to-many process" (like the mass media), but e-mail messages are similar to interpersonal communication in that "they can be personalised to the individual" (Rogers, 2003, pp. 215-216).

Actually, in the process of digitalisation in the SBS newsroom, the intranet played an important part as a communication channel. The notice board of the intranet was used actively by whistleblowers, who found the problems of the new digital systems, and the project team used it to explicate how technical errors or other troubles happened. However, the notice board of the SBS intranet mainly functioned negatively to innovation diffusion because complaints from the users continued and most of them were groundless or were based on misunderstandings, from the view of the project team.

> Almost every day, I found the problems of the digital news production system reported by the journalists on the intranet notice board. However, after checking the problems, trouble-shooters of the project team usually concluded that those errors were caused not by the digital news production system but by the inappropriate use by journalists. The conflicts between the project team and users were unavoidable because both sides did not trust each other because journalists never accepted the explanation of the project team (IT1, interviewed on 2 August 2007).

5.5 Nature of the social system: the structure of the newsroom impeded diffusion

Rogers (2003) defines a social system as "a set of interrelated units that are engaged in joint problem solving to accomplish a common goal", and notes, "the members or units of a social system may be individuals, informal groups, organisations and/or subsystems" (p. 23). He also suggests that, within a social system, diffusion occurs and subsequently the social structure of the system influences the innovation's diffusion in a number of ways, and therefore social system means "a boundary within which an innovation diffuses" (p. 24). Researchers have investigated how the newsroom as a social system forms what reporters do for decades (e.g., Tuchman, 1978; Schudson, 2003, Singer 2004). Among those researchers, Singer (2004) observes that "newsrooms are complex social structures with distinct cultures, routines and norms" (p. 14). In the end, successful implementation of IT innovations requires mutual adjustment of the technical features and social practices and structures of an organisation (Lin and Davidson, 2007, p. 1).

In order to investigate the relationship between the social system of the newsroom and the diffusion process that occurred within the SBS newsroom, the researcher focuses on how its social structure influenced the diffusion process and what was the effect of its norms on diffusion. Rogers (2003) defines structure as "the patterned arrangements of the units" in a system, and notes that the structure gives regularity and stability to human behaviour in a system (p. 24). Consequently, structure allows one to predict behaviour with some degree of accuracy. In the SBS newsroom, like other professionals, individual journalists enjoy substantial autonomy over their everyday activities. However, the SBS newsroom's well-developed social structure is hierarchical, giving individuals such as editors or an Editor-in-Chief the right to issue

orders to journalists of lower rank. Rogers (2003) noted that the structure of a social system can "facilitate or impede" the diffusion of innovations (p. 25), and this study found that the structure of the SBS newsroom impeded the diffusion of innovations to a great degree.

Rogers (2003) maintains that to understand the effects of a system's structure on diffusion, we should investigate "the effects of the characteristics of individuals" that make up the system, and consider the system effect, which is defined as "the influences of the structure and/or composition of system on the behaviour of the members of the system" (p. 25). This concept of "system effect" is helpful to understand the difference of the managers' behaviour between SBS and US newsrooms. In other words, the newsrooms of the two countries have different social and communication structures, which Rogers (2003) defines as "the differentiated elements that can be recognised in the patterned communication flows in a system" (p. 24).

In addition, Rogers (2003) refers to norms as "the established behaviour patterns for the members of a social system and notes that norms define a range of tolerable behaviour and serve as a guide or standard for the behaviour of members of a social system" (p. 26). This theory of norms is helpful in understanding why SBS journalists were unenthusiastic about editing pictures themselves, whereas the journalists of Tele 5 in Spain welcomed the picture-editing practice (Aviles and Leon, 2002, p. 365). Spanish TV journalists, the majority of whom adapted successfully after a month working in the new system, became much more involved in shoots out in the field because they knew they would have to edit the video later. Tele 5's manager of technical directors argues that journalists are now more interested in picture editing, since they know more about visual grammar.

> Essentially, the capacity of journalists are estimated and determined not by how good he or she is at picture editing, but by how excellent he or she is in newsgathering and writing stories. In other words, if a journalist failed to cover certain stories on his beat, because he was too busy in editing his pictures, it shows the journalist's lack of ability. In this situation, who will want to edit pictures for their own stories? (SR3, interviewed on 10 July 2007).

More than half (63%) of respondents to the questionnaire in this study agreed with the statement "I became more interested in picture editing after implementing the digital television newsroom," while less than one-tenth (8%) disagreed with the statement (Table 5.19).

Table 5.19 I became more interested in picture editing after implementing the digital television newsroom.

Strongly agree	agree	Neutral	Disagree	Strongly disagree	Total
6	73	36	8	2	125

In terms of age, almost two-thirds of those aged under 40 (63.3%) and those aged 40 or over (63.0%) agreed with the statement (Table 5.20).

Table 5.20 I became more interested in picture editing after implementing the digital television newsroom.

Age	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
Under 40	3	35	16	4	2	60
40 or over	3	38	20	4	0	65
Total	6	73	36	8	2	125

With regard to the respondent's position, three-quarters of senior editors (75%), almost two-thirds of sub-deputy and deputy editors (62.7%) and more than half of ordinary reporters (60%) agreed with the statement (Table 5.21).

Table 5.21 I became more interested in picture editing after implementing the digital television newsroom.

Position	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
Reporters	1	29	16	2	2	50
Sub-Deputy & Deputy Editors	2	35	17	5	0	59
Senior Editors	3	9	3	1	0	16
Total	6	73	36	8	2	125

By contrast, in response to the statement that "I have edited my own news stories after implementing the digital system," more than half of journalists (56.5%) disagreed with the statement, whereas only one-fifth (20%) agreed (Table 5.22).

Table 5.22 I have edited my own news stories after implementing the digital system.

Yes	No	No option	Total
25	71	29	125

With regard to age, more than half of those aged 40 or over (60%) and slightly more than half of those under 40 (53.3%) said that they had never edited their own news stories after implementing the digital system (Table 5.23).

Table 5.23 I have edited my own news stories after implementing the digital system

Age	Yes	No	No option	Total
Under 40	12	32	16	60
40 or over	13	39	13	65
Total	25	71	29	125

In terms of the respondent's position, more than half of sub-deputy and deputy editors (59.3%), senior editors (56.2%) and ordinary reporters (54%) disagreed with the statement (Table 5.24).

Table 5.24 I have edited my own news stories after implementing the digital system.

Position	Yes	No	No option	Total
Reporters	11	27	12	50
Sub-Deputy & Deputy Editors	10	35	14	59
Senior Editors	4	9	3	16
Total	25	71	29	125

5.6 Extent of promotion efforts by change agents: no change agents to help the project team

Rogers (2003) defines a change agent as "an individual who influences clients' innovation-decisions in a direction deemed desirable by a change agency" and notes that the change agent frequently tries to "obtain the adoption of new ideas" (p. 27). Noting that change agents are typically professionals with at least an undergraduate degree in a practical field, he states that change agents are heterophilous from their typical clients because of this professional training, and the social status that it entails (p. 28). In the case of SBS, the change agents were members of the NDS project team, which was led by the head of the project, Lee Sun-myung. However, they did not conform to Rogers' characterisation, since they were not "heterophilous" from their

clients, that is, SBS journalists. On the contrary, they were "homophilous" in every respect, including education, social status and the like.

However, the performance of the SBS project team was not so successful, because they were neither able to help resolve conflicts and to monitor morale nor to be a negotiator between the project team and the editing units who confronted the speed of adoption of the digital news production system, or between the IT unit and the engineering team who disputed the responsibility for operating the news control room.

> The newsroom organisation of Korean journalists is very authoritarian. I think the effect of newsroom digitalisation is the increase of democratic interaction between the management and journalists or between the senior journalists and junior journalists. However, Korean journalists and their organisations lack flexibility, and they are likely to be contented with the matter as it is. Their strong consciousness of kind impedes adoption of a new technology and leads to resistance. Some journalists are extremely opposed to newsroom digitalisation. Korean newsroom culture like this hinders the substantial development of the intrinsic value of journalism, while they achieve a superficial advance such as the introduction of state-of-the-art technologies (EX2, interviewed on 28 August 2007).

Although several of the SBS journalists were personally interested in the digital news production system and mastered the use of the new digital system earlier than other journalists, they never wanted to be change agents for the project. This means that the project did not realise the importance of change aides, and the project team failed to make the voluntary change agents help diffuse the innovation. If the project team had made an effort to use them for the project, these journalists could have been employed as change agent aides, who "intensively contact clients to influence their innovation-decisions" (Rogers, 2003, p. 28).

SBS's digital news project team took charge of surveying potential products in the market, making technological evaluations and providing suggestions about the adoption in the initiation stage. They also helped the system set-up and played the bridge role among users, agents and vendors. Apparently, they bore heavier burdens and took higher risks of possible negative implementation outcomes than the user

departments. Yet, the users departments were critical in making the adoption decision, as they knew whether the technology could meet their needs, solve their problem and incorporate into their workflow and production processes. Due to their different positions, the interviewees form two camps holding somehow different views in terms of making adoption decisions.

5.7 Responses from SBS journalists and obstacles to the digital innovations: the project team encountered resistance

According to Saltzis and Dickinson (2008), "The introduction of new technology is always related to organisational change, and change is quite likely to meet some resistance" (p. 223). Implementing and assimilating information technologies, such as SBS's NDS (the News Digital System) into organisational practices presents considerable technical and social challenges. In particular, the NDS project had "risk and complexity" as characteristics of innovations (Fidler and Johnson, 1984, p. 704), and those led to resistance within its organisational adoption unit, the SBS newsroom.

Unfortunately, the NDS project team did not realise the importance of well-defined strategies for the project. They were pressed for time and could not afford to design strategies. The project team was not able to carry out the project successfully. Its limited success was to be expected, because, in the absence of an effective implementation strategy, SBS journalists were, as Hemmingway (2005) observed in her research on the BBC, left to develop NDS "working practices as best they can to suit themselves and their newsrooms" (p. 12). SBS should have developed successful "strategies with deliberateness, giving particular attention to the process with which it will manage its own on-going expectations" (Swanson and Ramiller, 2004, p. 562).

Rogers (2003) did not pay much attention to the responses from clients. Accordingly, this study mainly uses frameworks provided by two empirical studies conducted by Rintala (2005) and Lin (2007). Examining employee experiences during technological change and job redesign in terms of the quality of working life of Finnish broadcast journalists in three broadcasting companies, Rintala (2005, pp. 142-146) found that six ways of experiencing newsroom digitalisation were: (1) a revolutionary change;

(2) an interesting change; (3) hardly a change at all; (4) a change full of uncertainties and images; (5) an interesting but stressful change; and (6) a difficult change.

A few of the SBS personnel thought the newsroom digitalisation was a revolution. First of all, Lee, the head of the project team, thought newsroom digitalisation was a complete revolution: "I reported to the top executives of the SBS board of directors that a revolution was breaking out in the world's leading broadcasting companies, such as BBC, NBC and CNN" (IT1, interviewed on 2 August 2007). One journalist said that digitalisation was a kind of revolution in the SBS newsroom, especially from the viewpoint of the project team, rather than journalists:

> The head of the project team told me in so many words that a revolution would take place soon, and we can realise the tapeless newsroom, and we would be able to edit pictures with a nonlinear editing system. The revolution would provide a convenient working environment, and the quality of pictures would be greatly improved and so on... (JR9, interviewed on 20 July 2007).

> Against the radical revolution, a great number of journalists mounted stiff and fierce resistance to the project team's idea and I was one of them. However, when I think of it now, how could we work without a digital system? (JR11, interviewed on 6 September 2007).

Rintala (2005) found that some of the interviewees saw digitalisation as "only a change of appliances and work tools" (p. 143) which did not greatly influence their work. She gave a detailed explanation of this group as follows:

> They felt that digitalisation was a natural and unambiguous phenomenon: the world changes and work tools change. They did not manifest strong positive feelings towards digitalisation but, on the other hand, digitalisation had not caused stress for them either. They believed that digitalisation was given a lot of attention because it was new for the employees and because it was a financially significant investment for the organisation. The interviewees had an uncomplicated attitude towards digitalisation. They experienced that the new technology had to be learned and they could learn it (p. 143).

According to Rintala (2005), another group of Finnish journalists described digitalisation as "an interesting change" (p. 143) and as a meaningful change: they enjoyed using the new technology and changes in job descriptions that had accompanied it. In this study, few SBS journalists thought digitalisation was "an interesting change." SBS tried to take advantage of newsroom digitalisation to renew existing systems. One PDP training manager at the BBC told staff at their first session (Hemmingway, 2005, p. 12):

> One of the things that we're hoping is to persuade as many managers as possible to start with a blank sheet and really restructure their newsrooms to take account of the opportunities that PDP has to offer (PDP Manager, Newcastle Training Centre).

In the same way, the SBS project team were hoping to persuade as many journalists as possible to start with a blank sheet and really restructure their newsrooms to take account of the opportunities that the NDS project had to offer (IT1, interviewed on 2 August 2007).

Regarding the attitude of journalists towards an innovation, Deuze (2005) notes that journalists have "a general reluctance to innovate, share knowledge, embrace the new technology – even though those that do reportedly think they are better for it" (p. 452). Furthermore, a survey commissioned by the World Association of Newspapers and conducted in 2001 among media executives worldwide, quoted as "the biggest obstacle to media convergence ... 'the individualistic nature of journalists' (mentioned by 31% of all respondents)" (Deuze, 2005, p. 452). Concerning the reason that journalists are likely to resist an innovation, Lin and Davidson (2007) observe that the transition to digital systems under the "time stress of TV news stations may heighten user resistance" (p. 4) to changing workflow, technological infrastructure, collaborative style, and organisational structure and management.

Changes that influence deeply entrenched habits and motivations, as Aviles and Carvajal (2008) note, "tend to be instinctively rejected at the start" (p. 230). This is one of the reasons why SBS journalists felt unenthusiastic about accepting the newsroom digitalisation. Moreover, Aviles and Carvajal (2008) observe that even if they achieve consensus, these processes will find obstacles because "resistance to

uncertainty is a built-in mechanism" (p. 230). Given that the SBS newsroom was not so successful in reaching a consensus, it was natural for the SBS project team to encounter resistance from reporters. One journalist said that the reason was the lack of communication between the project team and members of newsroom.

> The project team did not pay careful attention to the trends of journalists' opinion. They spent all their energies on the deadline of digitalisation, which was on the first of January 2004. Consequently, this lack of communication made many journalists feel a lot of antipathy to the project team (JR3, interviewed on 24 August 2007).

> Considerable numbers of SBS journalists showed unenthusiastic responses to the newsroom digitalisation project from the beginning, and they tried to find good excuses – whatever would justify their uncooperative and aggressive behaviours. Furthermore, they essentially regarded the project as not their own problem but the task of a small number of people (JR3, interviewed on 24 August 2007).

To make matters worse, as stated above in chapter 6, many journalists thought it was ridiculous for SBS to be a pioneer in introducing the digital news production system in Korea because there were two broadcasting companies larger than SBS – KBS and MBC – which had enough human resources and generous budgets for such a project. In fact, a considerable number of journalists thought that implementing the digitalisation project was no better than SBS acting as an experimental tool.

> A great many SBS journalists insisted that we should think why even larger broadcasting companies such as KBS or MBC had been unenthusiastic about introducing the digital news production system. When incidents occurred in succession including the erroneous breaking news captions regarding then President Roh Moo-hyun, the journalists with opposing views to those of the project team said "See! I told you so, didn't I?" (SR2, interviewed on 8 July 2007).

Davidson and Chiasson (2005) observe that professional groups exert "normative pressures" on organisations to adopt and continue "sanctioned ways of operating" (p. 8), and in the setting of the SBS newsroom which belongs to such a professional group, the SBS project team could face significant challenges to technological changes in practice.

However, as Gallivan (2001) observed, the inertia of SBS middle management and their resistance to change could be attributed to "middle managers trying to protect their own interests" (p. 72). The editors, who belong to middle management, wanted to continue enjoying the privilege of receiving treats from the news sources, and thus it was natural that they were resistant to the new Command Room, which caused them the great inconvenience of having to go out to receive mobile phone calls from the news sources, to make appointments to go golfing or to meet at a "room-salon," a type of decadent bar in Korea. As a result, although they pretended to adopt the innovation, they longed in their hearts for a return to the old system.

In addition to the complaints about the Command Room (see Table 4.19, 4.20, 4.21), the instability of the new digital system made journalists completely disillusioned with the overall NDS project. More than three-quarters (76%) agreed with the statement that instability was the biggest cause of dissatisfaction, while only 12.8% disagreed with it (see Table 5.2).

A senior journalist thought that the resistance mounted to the project started at the beginning of 2004, when the training for NDS began. This implies that the first public impression can be created at the training course, which is bound to start prior to the practical use.

> We had to undergo training not for one or two hours, but all day long at that time in the classes for various groups formed by the project team such as journalists, camera crew and picture editors. Furthermore, they forced us to practise using the NDS tools including simple editing on the laptop and inserting subtitles for our own news pieces. Most journalists thought the classes annoying and troublesome (JR9, interviewed on 20 July 2007).

A deputy manager of the engineering department, then a member of the project team, notes that there are two aspects in changing a newsroom environment; technological innovation and environmental innovation. He thought that the project was successful in the aspect of technological change because the project team allowed journalists to utilise the server-based system for "one source multi use." In addition, the project team promoted the introduction of the Information Support Centre to improve the

newsroom from the environmental aspect. The project team expected that the Information Support Centre would be useful and effective for news production. However, the centre was abandoned before several months had passed due the opposition of the journalists, to the disappointment of the project members.

> We decided to introduce the Information Support Centre which was intended to cut down expenses and make efficient use of the space in the newsroom by removing personal desks which were left unused all day long until journalists came back from their beat. We expected that journalists would enjoy the innovative environment which allowed them to work at any table and that they would think all tables shared were mine. Moreover, we provided them with personal lockers for keeping their belongings such as laptops (IT3, interviewed on 6 September 2007).

In particular, removing journalists' desks and making them share round tables led to fierce resistance. One senior journalist said:

> Originally, the NDS project was promoted for the newsroom digitalisation and the key point of the project was to digitalise the news production system, wasn't it? Why in the world did they remove our personal desks? Of course, there should be good reasons the project team had. Whatever the reasons might be, we could not accept them (SR14, interviewed on 13 September 2007).

> I admit that the Information Support Centre was promoted with good intentions by the project team. However, what made it inconvenient to us was the place where they installed the attaching plug. Consequently, we had to stoop to plug in the laptop. Saying disdainfully "What's all this?" journalists began to be disillusioned with the project. They wanted to work comfortably sitting at their own desks when they came back from their beat because they were mentally and physically exhausted with hard work in the evening. For all that, they had to wander from place to place in the newsroom. Although they attempted to bridge traditional barriers between departments by introducing more flexible structures, we felt it was inconvenient because it did not agree with our journalistic environment (JR3, interviewed on 24 August 2007).

> I understand that the Information Support Centre was introduced because the newsroom did not have enough space to place desks for all journalists. In addition, their intention was to lift traditional barriers between departments. Moreover, they removed almost all

the wire telephones on the desks. It was a stock argument of the project team that journalists had no further use of desks because journalists should gather news materials from the newsroom. Nevertheless, we found that their ideas were at variance with the real conditions. The key point was the culture of Korean people who regard their desks in their office as the symbols of their social status. Without desks, they couldn't have a feeling of satisfaction and they would be overcome with apprehension. As you know well, removing someone's desk is interpreted in Korea as an official suggestion to resign (JR3, interviewed on 24 August 2007).

I am not a technician. At that time, I thought that all I had to do was to introduce the infrastructure, which allowed journalists to do multimedia journalism. Additionally, I attempted to finally uproot evil work practices. Nevertheless, most journalists, including editors, thought that innovations were very good, but they wanted nothing to be changed during their term of office (IT1, interviewed on 26 July 2007).

5.7.1 Resistance: a deep-seated distrust of the project

Fidler and Johnson (1984) noted that in order to survive in today's rapidly changing environment, modern organisations "must constantly adapt" (p. 704). However, the reality is not so straightforward. There is always a strong possibility of encountering strenuous resistance from journalists, and subsequently, managers took a range of implementation strategies and tactics to motivate users towards desirable innovation response decisions. SBS was the case because "organisational inertia and resistance" to change were apparent within their newsroom.

When I broadcast news bulletins every morning in mid 2004, I was dreading a breakdown of the digitalised system. I still suffer sometimes from nightmares and whenever the bitter experience comes across my mind, my temples throb with pain even now (SR14, interviewed on 13 September 2007).

SBS aired several erroneous "breaking news" captions on the night of Sunday 20 June 2004. Coincidently, the incident occurred with the full digital news broadcast. This made SBS journalists much more worried about the instability of NDS. Vigorous protests, angry calls and Internet messages from the public followed one after another. Subsequently, SBS had no choice but to broadcast more captions of explanation and

apology with a promise to investigate the problem. As the story was reported in the newspapers, the SBS subtitle error had nothing to do with the NDS project but was caused by a technician who opened a subtitle-sending programme (see the related article next to Table 5.27).

However, the majority of SBS journalists believe that the NDS system gave rise to a serious problem. This shows that SBS journalists have a deep-seated distrust of the NDS project. Their attitude is evidenced in the results of our survey relating to attitudes to the subtitle error. More than 40% of respondents (43%) agreed with the statement that "The wrong explanatory title, on the impeachment of President Roh Moo-hyun, was due to the SBS news digital system's failure", while slightly less than 40% of the respondents (39%) disagreed (Table 5.25).

Table 5.25 The wrong explanatory title, on the impeachment of President Roh Moo-hyun, was due to the SBS news digital system's failure.

Strongly agree	agree	Neutral	Disagree	Strongly disagree	Total
11	42	22	37	11	123*

*Two respondents did not answer this question.

With regard to age, the older they were, the fewer journalists thought that the accident was related to the digital system. More than half of those aged under 40 (50.8%) agreed with the statement, whereas just more than one-third of those over 40 (35.9%) agreed. On the other hand, almost half of those aged 40 or over (48.4%) disagreed with the statement, while only slightly more than one-quarter of those aged under 40 (27.1%) disagreed (Table 5.26).

Table 5.26 The wrong explanatory title, on the impeachment of President Roh Moo-hyun, was due to the SBS news digital system's failure.

Age	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
Under 40	7	23	13	13	3	59
40 or over	4	19	9	24	8	64
Total	11	42	22	37	11	123*

*Two respondents did not answer this question.

In terms of the respondent's position, more than half of senior editors (53.3%) and less than half of sub-deputy and deputy editors (45.7%) disagreed with the statement, whereas only slightly more than one-quarter of ordinary reporters (26.5%) disagreed with the statement. On the other hand, slightly more than half of ordinary reporters

(51.0%) and less than half of sub-deputy and deputy editors (40.6%) agreed with the statement, whereas just slightly more than one fifth of senior editors agreed (26.6%) (Table 5.27).

Table 5.27 The wrong explanatory title, on the impeachment of President Roh Moo-hyun, was due to the SBS news digital system's failure.

Position	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
Reporters	4	21	11	11	2	49
Sub-Deputy & Deputy Editors	6	18	8	21	6	59
Senior Editors	1	3	3	5	3	15
Total	11	42	22	37	11	123*

*Two respondents did not answer this question

The story of SBS airing erroneous breaking news captions was reported in a Korean newspaper under the title of "SBS investigating glitch" as follows:

Seoul Broadcasting System, which on Sunday night aired several erroneous breaking news captions, is conducting an investigation to discover how the incident occurred.

The private broadcaster was airing news updates on the heavy rains during a drama programme, in the form of text at the bottom of the television screen.
However, one of these breaking news captions said the Constitutional Court would summon President Roh Moo-hyun on May 30.

The error occurred at 9:43 p.m. and several other incorrect captions followed.
They included: "President Roh allows conditional referendum on capital relocation," "Talks break down between hospitals and unions – strike commences at 7 a.m." and "Fire breaks out at a Chuncheon Prison at 9 p.m." Each caption remained in place for about two seconds. About 20 minutes after the first incorrect caption appeared, the broadcaster aired an apology.

The station said some of the texts related to news that had been aired previously, while others were prepared in anticipation of possible breaking news. The error occurred on two different fronts, according to the broadcaster yesterday. Three were transmitted due to errors in the auto-programming control system, while the caption on Roh being summoned was stored in a graphic file in the news bureau and accidentally aired, SBS said.

Immediately following the airing of the captions, SBS was bombarded with calls. In addition, many people posted messages on the company website calling for the station to acknowledge the error and apologise.

At 10:05 pm, SBS started airing captions explaining that the error occurred due to a technical glitch. "It seems that the technical problems took place because previously made files in preparation for the news on the impeachment were wrongly opened

while a technician operated a subtitle-sending programme," an SBS announcer later said on the air.

Source: *The Korea Herald* (22 June 2004)

The key challenge is changing journalists' minds and culture in the newsroom.

The journalists who made a last-ditch stand against NDS were opposing the new system not because the system was unsatisfactory but because they were in constant fear of change. If we failed to adapt to the new technological environment, we would die out. The survivors would be those who make the most of digital technologies and obtain information much quicker than competitors (JR6, interviewed on 8 July 2007).

The Editor-in-Chief Kim Sung-woo himself changed his attitude on digital technologies. I could hardly believe my eyes when I met him early this year (2007), because he always reminds me of the incident of March 2004. From the start, Kim, then head of Editing Unit One, had opposed the project in every way and even handed in his resignation following the dispute with Lee Sun-myung, the then head of the NDS project. The quarrel between them was settled in March 2005 when Kim was promoted to Editor-in-Chief and Lee who had competed for the post of Editor-in-Chief was demoted to Vice President of SBS NewsTech, a small subsidiary company which mainly consists of the two units of camera crew and picture editors. Even when he took office as the Editor-in-Chief in March 2005, he had personal resentment against the Lee. However, recently he realised that digital news technology was essential for newsroom innovation and better journalism in the future. In March he ordered News Coordinator, Editor Kim Young-hwan, to formulate a plan to improve the quality of SBS news. He emphasised, in particular, the need to reform the news strategies on the basis of digital technologies including an interactive service through the SBS news website (IT3, interviewed on 6 September 2007).

The project team should have pondered what could make journalists feel most comfortable in their work process. Nevertheless, journalists felt that they were forced to adjust themselves to the organisation's needs (JR9, interviewed on 20 July 2007).

In my view, the project team members seem to have not fully understood what the digital news production system was and how it should be implemented. They had only a limited understanding of what the job involved. If we had a digital guru like Bill Gates as over

manager of the NDS project, we could have implemented the project successfully (SR4, interviewed on 23 July 2007).

The company management should have considered the relative merits of introducing the new system into the SBS newsroom, because NDS clearly has its advantages and disadvantages. Nevertheless, they took too optimistic a view regarding the result of implementing the news production system (SR3, interviewed on 10 September 2007).

5.8 Summary

This chapter discussed the process by which SBS introduced the digital TV news production system into the SBS newsroom in terms of the journalist, using the Rogers' (2003) model of five stages in the individual innovation-decision; knowledge, persuasion, decision, implementation and confirmation.

Regarding the knowledge stage, while SBS journalists began to be exposed to NDS a long time before the project team was established (2 July 2003), they were unenthusiastic to use it because they did not consider it pertinent to their circumstances or beneficial in the future. At the persuasion stage, SBS journalists who experienced the unexpected system crashes did not consider the information provided by the project team as trustworthy and, consequently, they made a negative interpretation of the messages of the project team.

At the decision stage, SBS journalists did not have the chance to adopt or reject the digital news production project because the management had mandated it and this meant that if a journalist did not adopt the project, he could lose his job. At the stage of implementation, the SBS project team, met with fierce resistance from SBS journalists, and consequently, all of the original goals except newsroom digitalisation were abandoned in the end. At the confirmation stage, SBS journalists had a feeling of dissonance about why SBS should run the risk of implementing new technology which had never yet demonstrated its stability.
The study also found that this research supported Rogers' argument on the importance of relative advantage and compatibility. Regarding the communication channel, there are many studies which highlight the significance of the interpersonal channel. In this

case, the SBS project team was not successful in using the interpersonal channel, which made their innovation process more difficult.

As to the social system, focusing on the social structure and norms, the researcher investigated how the two factors influenced the process of innovation diffusion in the SBS newsroom. The result shows that the two factors negatively affected the endeavour of the project team of spreading the new systems as early as possible. Although change agents were important to innovation diffusion, there were no diverse agents or leaders in the process of SBS newsroom digitalisation. Instead of those agents, the project team was the only body for the promotion of innovation in SBS. Consequently, the team did not enjoy the support of either the company or any of the leaders of the journalists. These conditions led to a difficult innovation process, and the lack of strategies worsened the situation of the SBS newsroom. The next chapter presents the conclusions drawn from the research.

Chapter 6 Implications of Newsroom Digitalisation

This chapter investigates the implications of implementing newsroom digitalisation through analysis to understand the technological dimension of editorial work and the dynamics of newsroom digitalisation. Digital technology is distinct from analogue. Although the final product, TV news content per se, is just enhanced, not altered saliently, news practices, workflow, collaboration, skills and norms are fundamentally changed in segments that involved digital shooting, nonlinear editing, digital broadcasting and databases. To have a smooth transition from the old to the new, SBS management made great efforts to narrow the gap between analogue and digital systems and developed new workflow, production processes and new work built upon the existing model. Even so, the digital TV news production system still had significant impacts on the news production process, and job descriptions. Among researchers who rarely paid attention to the consequences of those innovations, Aviles et al. (2004, p. 87) and Aviles and Leon (2002) addressed the detailed changes introduced into newsroom practices (see Section 2.8).

This chapter mainly follows the frameworks of the three studies shown above. In order to answer RQ3 this chapter investigates the impact of implementation of the digital system on the news production process, news work, news representation and collaboration in the SBS newsroom. For this purpose, section 6.1 examines the changes in the news production process after newsroom digitalisation and section 6.2 discusses changes in the SBS newsroom organisation. Section 6.3 investigates the results of newsroom digitalisation regarding multi-skilling innovation, section 6.4 discusses the issue of the value of journalism, focusing on news quality, and finally section 6.5 summarises the main points discussed in this chapter.

6.1 Changes in the news production: saving time in picture editing

6.1.1 Journalists can change pictures more easily, and save time in picture editing.

With the introduction of the integrated digital newsroom, journalists can change pictures more easily, and this, as Aviles et al. (2004) observe, allows them to "finish

news stories closer to air-time" (p. 93). Thus, under the analogue system, SBS journalists tended to complete their items just before airtime:

> Before introducing NLE (nonlinear editing), it required complicated processes to give "the dissolve effect" moving gradually from one image or scene in a tape to another. Now we can do it right away. While in the past, it usually took more than half an hour to finish one item, now we can make it within five or ten minutes (SR2, interviewed on 8 July 2007).

The digital TV news production system also saves time that was previously taken to duplicate tapes for different platforms, which accelerates speed and increases convenience, especially for multi-channel TV news (IT1, interviewed on 2 August 2007). The agility of the rundown is increasingly important, as bulletins are progressively more subject to last minute changes. Therefore the user-friendliness of the status display inside the rundown is essential. NRCS (Newsroom Computer System) controls automation, either internally or by interfacing seamlessly with a third-party automation system. This allows changes at the last moment (to drop or to replace a story) to be decided from a journalistic perspective (Bebert, 2005, p. 9).

> We can arrange rundowns much quicker than we used to. After digitalisation, we frame rundowns in five minutes, which previously took half an hour to do. In addition, we can make last minute changes with ease (IT1, interviewed on 26 July 2007).

Accordingly, the deadline for news stories which had been 7:30 pm since SBS was launched in 1991, became just two or three minutes before the time set in the rundown concerned because the new digital systems allowed the news director to make last minute changes with ease

In addition, SBS journalists now do not rely just on a few editing booths, where bottlenecks frequently occurred shortly before broadcast time, since the number of editing terminals was at least doubled with the introduction of the digital news production system. Furthermore, craft editors can start their picture editing even before the text and the recorded voice-over are handed in:

Currently, when time is short or in case of emergency, we begin to prepare relevant materials by searching archives through the networked system, according to the text, which can be found via the intranet system. Now we don't need to wait until the text and voice-over have been delivered to us. We also can check if a picture of an item, which is now being edited by one craft editor, is overlapped with those of the related item being made by another editor. Sometimes, editors or deputy editors from each department point out the errors monitored and found through the networked system. For example, when a certain scene of political events is not relevant to the present item (PE1, interviewed on 23 July 2007).

In the early stage, a majority of picture editors were not so swift in handling the digitalised NLE system. Consequently, there was a wide difference in the skill in picture editing between the editors with a practised hand and those who had not become accustomed to it yet (JR7, interviewed on 10 July 2007).

6.1.2 The editors became more concerned and watchful over picture editing

The digital news production system allows management to intervene in the content easily, and programme editors have instant access to the items being written or picture edited by each journalist. Therefore, editorial control matters in a digitalised newsroom, as Aviles et al. (2004) observe (p. 95). However, this is simply not the case as far as the SBS newsroom is concerned, because SBS editors did not use the new systems enthusiastically. As shown in Table 6.1, just a quarter of the respondents (25.8%) thought that the editors became more concerned and watchful over picture editing after implementing the digital television newsroom, whereas much more than one-third of the respondents (41.9%) did not think that there was a change of editors' attitudes to picture editing.

Table 6.1 The editors became more concerned and watchful over picture editing after implementing the digital television newsroom.

Strongly agree	agree	Neutral	Disagree	Strongly disagree	Total
2	30	40	44	8	124*

*One respondent did not answer this question.

In terms of the respondent's position, the lower their position, the more journalists thought that the editors did not become more concerned and watchful over picture

editing after implementing the digital television newsroom. For example, almost half of ordinary reporters (46%) disagreed with the statement, and a similar ratio of sub-deputy and deputy editors (43.1%) disagreed with the statement. In the case of senior editors themselves, just one-quarter (25%) disagreed with the statement (Table 6.2).

Table 6.2 The editors became more concerned and watchful over picture editing after implementing the digital television newsroom.

Position	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
Reporters	2	28	11	9	0	50
Sub-Deputy & Deputy Editors	3	26	18	11	1	59
Senior Editors	4	8	3	0	0	15
Total	9	62	32	20	1	124*

*One respondent did not answer this question.

SBS journalists thought that only a few editors were monitoring what was in progress in editing, whereas a majority of them were not able to do so because they were usually inundated by floods of items from the late afternoon.

On the other hand, only a few of SBS's news directors exceptionally had access to every script and video once it was in the system ready to be broadcast, so that they could propose last minute modifications or improvements. One journalist said:

> Editors' supervision of news items was tightened since they came to have access to the news items being made at any time through the networked system. Most editors screen the processes of their reporters' work and the final product. The editors' supervision can influence the whole process of news making, which was inconceivable under the analogue system (JR1, interviewed on 10th July 2007).

Regarding journalists' attempts to evade editors' supervision for their picture editing (see Section 2.8), this is not the case in the SBS newsroom, since journalists are not likely to be disobedient to their editors.

> Editors' tightened supervision helps to adjust sensitive news such as anti-government demonstrations, which sometimes use controversial pictures including a man's attempt to burn himself to death. As far as I know, no SBS journalist tries to escape his or her editor's supervision to the last. Furthermore, from the beginning they usually give up

writing such sensitive stories due to self-censorship, or the guidelines provided in advance by their editors (JR1, interviewed on 10 July 2007).

SBS editors can monitor news content through the networked system, after news workers have ingested work into the system and ask them to modify inappropriate content as early as possible. The digital TV news production system is also useful for keeping track of the progress of news editing in dozens of editing rooms (IT1, interviewed on 2 August 2007). In other words, the system allows editors to access reporters' pieces while they are still being produced at their editing terminals.

> Editors usually access journalists' script and video once it is in the system ready to be broadcast and then they can suggest last minute corrections or improvements. Subsequently, when the piece is politically or socially important and likely to lead to a dispute, editors never fail to review it in advance (JR1, interviewed on 10 July 2007).

Compared with editors in European broadcasting companies such as the BBC or Telemadrid, SBS editors pointed out that no journalists deliberately completed their pieces just before the broadcast. In addition, few SBS journalists admitted that they often had edited pieces slowly to elude excessive intervention by the editors. Most journalists do not want to cause trouble with news stories.

There may be a relationship between the digital news production system and journalists' independence, which can improve the news content. One reporter at Antena 3, said that whereas, with the analogue system, journalists had to wait in the booths for their stories to be edited and thus wasted time, after newsroom digitalisation, they could organise their time according to their own time limit (Aviles et al., 2004, p. 97). In the same manner, the introduction of the digital news production system could have saved SBS journalists time if they had edited pictures for their news stories. However, they did not choose to do the picture editing themselves, and therefore they were not able to have this independence. Furthermore, it could be concluded that they did not want to win independence because they were unenthusiastic about editing their own stories, a practice that is necessary to win independence from the control of the craft editors. This indicates that a specific

innovation never produces the same result, and all the consequences depend on each newsroom's environment.

6.1.3 Journalists asked for a more skilled picture editor

A considerable number of journalists wanted to avoid working with unskilled picture editors. 41.9% of respondents agreed with the statement that "I have asked for a more skilled picture editor than the picture editor who has been assigned to me after the introduction of SBS News Digital System", whereas 34% of them disagreed. This means that a considerable number of journalists encountered difficulties caused by some picture editors who lacked skill in nonlinear editing (Table 6.3).

Table 6.3 I have asked for a more skilled picture editor than the picture editor who has been assigned to me after the introduction of SBS News Digital System.

Strongly agree	agree	Neutral	Disagree	Strongly disagree	Total
5	47	29	37	6	124*

*One respondent did not answer this question.

In terms of age, almost half of those aged under 40 (49.1%) agreed with the statement, while slightly more than one-third of those aged 40 or over (35.3%) agreed. This shows the younger journalists avoided less skilled picture editors more studiously than the older journalists. This phenomenon can be interpreted as showing that the young journalists, who were usually skilled in IT, were less tolerant of clumsy picture editors (Table 6.4).

Table 6.4 I have asked for a more skilled picture editor than the picture editor who has been assigned to me after the introduction of SBS News Digital System.

Age	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
Under 40	5	24	13	13	4	59
40 or over	0	23	16	24	2	65
Total	5	47	29	37	6	124*

*One respondent did not answer this question.

> In addition to a variety of troubles brewing among the journalists, the project team forced them to use the new graphic system, which can be previewed at the workstation and played out by the automation system. However, this made matters much worse because the caption system did not work properly (SR14, interviewed on 13 September 2007).

6.1.4 Extensive changes to the job of news presenters

News presenters experienced many problems with NDS first-hand (Table 6.5). A presenter said that NDS has advantages, which can offset the disadvantages. An on-camera prompter is a display device that prompts the presenter with an electronic visual text of the news script. As the presenter no longer needed to look down to consult written notes, he or she appeared to have memorised the script or be speaking spontaneously, which made the viewer trust the TV presenter more.

Table 6.5 Changes in the job description of TV news presenters

Jobs	Old job roles	News job roles
Prompter	Assistant directors were responsible for the prompter	Presenters are responsible for the prompter
Correction of text	Presenters had to read as shown on the prompter screen.	Presenters can correct the text whenever they want.

> The biggest change was that presenters should control the on-camera prompter. In terms of broadcast skills for presenters, the analogue system was much more convenient, because it was simple to read text which assistant directors provide on the screen of the prompter. However, digitalisation made us control the prompter ourselves. In the past, we were able to broadcast simply by reading the text prepared for presenters. Formerly, all news scripts for the main 8 o'clock News had to be handed in not later than 7.30 pm. A presenter began panicking as the deadline approached. He used to shout to assistant staff to hasten journalists to submit stories immediately so that he or she could prepare comments to introduce each item. Previously, we were not able to know the content of scripts until journalists submitted them to the presenter. After digitalisation, the new digital systems give all staff in the newsroom access to all the news stories as editors are screening them. As a result, editors these days usually leave the scripts of a presenter to him or her (SR13, interviewed on 13 September 2007).

6.1.5 Changes to the job of camera crews and picture editors

SBS camera crews faced radical changes to their job. Their broadcasting-level Betacam cameras were not replaced. However, nonlinear editing changed ways of picture editing (CC1, interviewed on 12 September 2007). Besides, they carried notebook computers with NRCS (newsroom computer system), which allowed them to edit at anytime, anywhere. Picture editors could move files in databases directly to

their NLE workstations. This shortens the editing time greatly and reduces negative affective responses of the journalists and picture editors. Some editors even played a role as the key mediators in TV news digitalisation. They were seed instructors who passed on the knowledge of nonlinear editing and digital broadcasting to colleagues and first-line trouble-shooters for digital equipment.

> There are twenty-seven picture editors in the SBS newsroom editing unit. They are responsible for managing the data base system, too. They feel that they are in a critical position. They found that, after the adoption of the new system, their roles have to be changed. Now they have to produce news stories with more special effects (PE2, interviewed on 12 September 2007).

The staff of the picture editing section was reduced from 28 to 21. The head of the picture editing section attributed this high productivity to the digital news production system, providing in-house data (Tables 6.5, 6.6, 6.7) regarding their manpower structure and the improved efficiency (PE1, interviewed on 23 July 2007). In addition, a picture editor detailed the improved productivity due to introduction of the nonlinear editing system:

> The number of staff in the picture editing unit is 28 people as of September 2007, which is the same number as it was before moving to the new headquarters. However, the amount of news time has increased almost more than twice (80.7%, Table 6.6) two years after digitalisation. It could be attributed to the digitalisation systems, that is, nonlinear editing systems that we could manage without an increase of staff (PE2, interviewed on 12 September 2007).

Table 6.6 Rate of increase in news output

Category	May 2004	Oct 2004	May 2005	Oct 2005	June 2006
News output (min)	161	206	212	244	291
rate of increase	100%	127.9 (+ 27.9%)	131.6% (+ 31.6%)	151.5% (+ 51.5%)	180.7% (+ 80.7%)

Source: The in-house documents provided by SBS's Head of the Picture Editing unit.

As shown in Table 6.7, SBS's 28 editors produced 310 minutes of news per day (11.0 minutes per person), whereas at MBC 30 editors produced only 280 minutes of news (9.3 minutes per person). Since moving to the new headquarters in 2004, ~~SBS~~ the staff

of the SBS picture-editing unit had increased by two people in two years (Table 6.8). Although about one year later, five people had joined, the number of available editors was less than the number actually employed by the organisation because of various circumstances such as maternity leave.

Table 6.7 Manpower structures of picture editing in major networks

Category	SBS	KBS	MBC
number	28 editors	47 editors	30 editors
news output (per day)	310 minutes	478 minutes	280 minutes

Source: The in-house documents provided by SBS's Head of the Picture Editing unit.

Table 6.8 Manpower structures in the SBS picture-editing unit

Category	2004	2005	2006
number designated	21	23	23
editors available	22	24	21
remarks	temporary 1	recruited 2 temporary 1	maternity leave 1 switched 1 discharged 1

Source: The in-house documents provided by SBS's Head of the Picture Editing unit.

6.1.6 Changes in the SBS control room

Based on participant observations in the SBS newsroom for more than four months from the beginning of May to early September 2007 and interviews with staff concerned, the researcher summarised how digitalisation changed the work practices in the SBS control room just before the final countdown to broadcasting a news bulletin, as shown in Table 6.9.

Table 6.9 Changes in the SBS control room in the countdown to broadcasting a news bulletin

Before	After
Control rooms were confused and noisy because of hectic schedules	Clashes reduced greatly. Shouting and shrieking largely disappeared.
Journalists or operational staff had to rush into the control room with tapes so as not to be late for the on-air time.	As staff could access and share all the material tapes by the computer-networked system, nobody had to dash towards the control room.
When tapes could not be produced or copied before the time limit, clashes arose between news directors and craft editors or journalists.	With tapeless operation, the time pressure and emotional strain reduced because people did not run around to chase tapes or send them to the control room just before the news bulletins and during the on-air time.

6.2 Changes in the SBS newsroom organisation: new jobs were introduced and redundant jobs were abolished

6.2.1 New jobs were introduced

Newsroom digitalisation usually entails changes to the organisation of the newsroom. However, few researchers have paid attention to journalistic job descriptions and competency changes with digitalisation and how these changes are experienced in terms of the quality of working life. Rintala and Suolanen (2005, p. 53) observed that changes in job descriptions can occur in different ways (see Section 2.8). According to Aviles et al. (2004), while digital technology has been adapted to current newsroom structures, in the structure of Spanish digital newsrooms, a number of significant changes have been made (see Section 2.8).

In the same manner, SBS established three new jobs; ingesters, archive managers and system managers (Table 6.10). In the digital environment, all pictures gathered in the field should be sent to the storage server, and this task is carried by ingesters who usually are require to have three or four years' experience in broadcasting work. Once reporters edit their stories, they are sent back to the server from where they can go straight on air. A selection of the material will be kept in the server for several days, and afterwards, it is available in a digital archive. The task of archive managers is to sort out the pictures to be kept and some to be deleted completely, while system managers with an engineering background take care of the technological aspects of the equipment.

SBS archive managers with five archivists catalogue continuously at the ingest desk and there are five others who select from source materials and rush videos to be saved in the server-based archive system. Bebert (2005), who conducted a case study of the technology solutions in operation at SBS, describes its archive system as follows:

> SBS saves an average of 12.5 hours of material per day, including each newscast as a single item and up to 7.5 hours of source material. SBS no longer keeps any new material on tape other than as data. Since its launch in 1991, SBS has generated over 70,000 hours of news archive material, which is stored on almost 150,000 cassettes. As part of the run-

up to the digital news project, archivists selected and ingested the most important and relevant 3000 hours of this deep-archive material, one of very few broadcasting companies in the world which has carried out such a systematic digitisation of existing tape-based archive material. In addition, System Managers deal with the technical problems, such as system maintenance, debugging and troubleshooting (p. 4).

Table 6.10 Job changes with introduction of the digital news production system

Term	Abolished jobs		Newly created jobs		Remarks
Short-term	Video tape staff	7	Ingesters	5	
	Prompter controllers	2	Archive Managers	5	
	Subtitle generators	5	System Managers	9	outsourced
Long-term	Studio camera crew		Robot camera		gradually
	Illumination staff		Computerised lighting		
	Unskilled engineer		Multi-skilled engineers		

Source: Lee (2004a, p. 54)

6.2.2 Redundant jobs were abolished

On the other hand, SBS had to abolish three existing jobs: staff for videotape management, prompter controllers and personnel for subtitles. Staff for videotape management became redundant once analogue tapes were replaced by digital clips. In the same way, prompters were removed because the presenters replaced the task in the digital environment. In addition, as subtitles were typed by journalists themselves, the personnel for subtitles were dismissed.

With the introduction of the digital news production system, some British newsrooms, as Aviles et al. (2004, p. 94) observed, experienced job reductions, whereas no redundancies occurred in the Spanish news organisations. The SBS newsroom also did not experience job reductions because the digital news production system offered expanded news hours, the medium size of the organisation led to easier reassignment in new jobs within the newsroom – these reasons are the same ones as for the Spanish broadcasting companies. However, there was one difference between the SBS and the Spanish companies, that is, the role of trade unions. In the Spanish newsrooms, trade unions exerted an influence to secure the jobs of their members by asking for the relocation of any redundant workers. However, the trade union of the SBS journalists did not become involved in the job reduction issue because the project team promised they would not cut jobs and redundant workers would be relocated.

> Although no official positions were announced for redundancy by management, most journalists had guessed the digital project was designed as a part of a strategy for making job reductions and carrying out a cost-cutting exercise. In other words, we understood that speed and cost effectiveness were the rationale for the introduction of digital technology in the SBS newsroom (JR7, interviewed on 10 July 2007).

6.3 Newsroom digitalisation and multi-skilling: no interest in multi-skilling

6.3.1 A lack of enthusiasm for multi-skilling

There is a great disparity in the perception of multi-skilling between the SBS newsroom and European broadcasting companies including the BBC and ITN (UK) and Telemadrid, Telecinco and Antena 3 (Spain). According to Aviles et al. (2004), they were able to observe multi-skilling to some extent in all the networks studied. In particular, the Spanish newsrooms achieved further progress in this direction (p. 95). Compared with British newsrooms, where some journalists edit their own pictures but this is by no means the norm, in Spanish newsrooms, journalists adhere to the principle of editing pictures of news stories on their personal computers. Traditionally, in both SBS and most Spanish television newsrooms, what journalists were essentially concerned with previously was not picture editing but editorial content: all they had to do was to gather background information, interview news sources, write the text and read the voiceover. Nevertheless, SBS journalists did not show much interest in multi-skilling, whereas the European journalists embraced the new work practice.

> The project team established the objective of multi-skilling, so-called "one-man bands" or "backpack journalists," who are sent out on assignments alone, being solely responsible for shooting video, recording audio, writing text and putting it all together in a coherent news package. In addition, we provided journalists with technical system equipment to fulfill the objective (IT3, interviewed on 6 September 2007).

Furthermore, SBS journalists did not believe that multi-skilling allowed for superior journalism. They never regarded multi-skilling as a prerequisite for their daily work. On the other hand, a few journalists took a positive attitude to the practice of multi-

skilling. They admitted the trend of multi-skilling is unavoidable and felt that simple editing by journalists has advantages for both journalists and the news organisations. In Korea, ostensible multimedia journalism has been conducted since the 1950s when TV broadcasting began. In other words, a contribution to the radio news had been incorporated into journalistic routines long before the spread of the multimedia journalism concept (Table 6.11). Subsequently, Korean TV broadcasting stations expected that journalists should work for the radio news without giving them extra allowances.

Table 6.11 Outlets of SBS news

Before digitalisation	TV + Radio + web
After digitalisation	TV + Radio + web + DMB

In addition, Korean broadcast journalists have been required to contribute to a variety of outlets. For example, they have produced news stories for their organisations' websites since the late 1990s. The outlets added after digitalisation are DMB, a mobile TV service and IPTV (Internet Protocol TV: multimedia services such as television, video, audio, text, graphics, and data delivered over Internet Protocol).

Nevertheless, in terms of real meaning, SBS journalists have never done multimedia journalism because their participation in the various outlets has been extremely limited and they have been far from enthusiastic about multimedia journalism. One journalist observed as follows:

> Blogging for the SBS news website was encouraged by the Editor-in-Chief Kim Sung-woo in February 2007. A reward of 300,000 Korean Won, approximately equivalent to £150 (GBP), was offered monthly to an excellent blogger who contributed enormously to the website. Before long, journalists found that collecting materials such as titbits of news for blogging was a demanding job. Consequently, the scheme fell apart in just three months because journalists were already tired from work on daily bulletins (SR3, interviewed on 10 September 2007).

> It is clear that we are forced to write for the SBS news website. Although the company has attempted to persuade us to take part in the scheme under the slogan "It is the age of multimedia," obviously, we groan under a heavy burden (JR1, interviewed on 10 July 2007).

Some SBS journalists even wanted their own news stories to be published in the major portal sites such as Naver, Daum, Yahoo Korea and Google Korea because of the influence of these sites. In other words, they preferred portal websites to their own website as a news outlet to diffuse their news stories more widely.

> News portal websites such as Naver and Daum have great influence in the media industry. The news stories posted on Naver are diffused much more widely than those given just in SBS news broadcasts are. Even if a news story was broadcast on SBS, it is essential for it to be chosen and posted on news portal websites (JR4, interviewed on 20 June 2007).

Only a minority of journalists (15.2%) agreed with the statement that "I would like to write on the SBS website before it aired on TV when I have an exclusive story," whereas more than three-quarters of them (77.6%) did not readily contribute their exclusives to the SBS website (Table 6.12).

Table 6.12 I would like to write on the SBS website before it aired on TV when I have an exclusive story.

Strongly agree	agree	Neutral	Disagree	Strongly disagree	Total
3	16	9	75	22	125

In terms of the respondent's position, more than four-fifths of sub-deputy and deputy editors (83.0%) and ordinary reporters (82%) disagreed with the statement, whereas just less than half of senior editors (43.7%) disagreed. In particular, almost one-third of senior editors (31.2%) agreed with the statement, while just 14% of ordinary reporters and 11.8% of sub-deputy and deputy editors agreed (Table 6.13).

Table 6.13 I would like to write on the SBS website before it aired on TV when I have an exclusive story.

Position	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
Reporters	1	6	2	34	7	50
Sub-Deputy & Deputy Editors	0	7	3	35	14	59
Senior Editors	2	3	4	6	1	16
Total	3	16	9	75	22	125

Although SBS journalists did not adopt a positive attitude towards multi-skilling work practices, as shown in Table 6.14, almost two-thirds of SBS journalists (61.2%)

thought that multi-skilling would become a necessary requirement for a journalist in the future.

Table 6.14 Multi-skilling will become a necessary requirement for a journalist in the future.

Strongly agree	Agree	Neutral	Disagree	Total
7	69	31	17	124*

*One respondent did not answer this question.

In terms of age, almost two-thirds of those aged under 40 (63.3%) and more than half of those aged 40 or over (58.4%) thought that multi-skilling would become a necessary requirement for a journalist in the future (Table 6.15).

Table 6.15 Multi-skilling will become a necessary requirement for a journalist in the future.

Age	Strongly agree	Agree	Neutral	Disagree	Total
Under 40	1	37	16	6	60
40 or over	6	32	15	11	65
Total	7	69	31	17	124*

*One respondent did not answer this question.

With regard to the respondent's position, nearly three-quarters of senior editors (73.3%) thought that multi-skilling would become a necessary requirement for a journalist in the future. On the other hand, slightly more than half of lower-ranking journalists agreed with the statement: 62% of reporters and 57.6% of sub-deputy and deputy editors agreed with the importance of multi-skilling as a necessary requirement in the future (Table 6.16).

Table 6.16 Multi-skilling will become a necessary requirement for a journalist in the future.

Position	Strongly agree	Agree	Neutral	Disagree	Total
Reporters	1	30	14	5	50
Sub-Deputy & Deputy Editors	3	31	13	12	59
Senior Editors	3	8	4	0	15
Total	7	69	31	17	124*

*One respondent did not answer this question.

In particular, a few journalists who were interested in new trends towards newsroom digitalisation or converged news production practices expected that editing by journalists would be common in the near future.

> As the age of UCC (user created content) came, anybody could make their own broadcast material and transmit on a variety of outlets including YouTube. Consequently, in my opinion, people became less critical about the degree of perfection than before. This means that eventually, we can broadcast without problems news items which are roughly edited by journalists. In some European countries, we can often see TV news items edited by the journalists who covered the news (JR5, interviewed on 22 June 2007).

Furthermore, more than three-quarters (76.8%) of SBS journalists thought that the company should invest more in encouraging multimedia practices, while merely 4% disagreed with the statement (Table 6.17). This means that journalists admitted the necessity of multimedia news production not now but in the future, in other words, when the circumstances improved, for example, when staffing increased sufficiently.

Table 6.17 SBS should devote more in making multimedia news production.

Strongly agree	agree	Neutral	Disagree	Strongly disagree	Total
21	75	24	4	1	125

In the same way, more than half of the respondents (57.2%) agreed with the statement that "I would like to be a multi-skilling journalist when I am supported systematically," whereas less than one-fifth of the journalists (16.9%) disagreed (Table 6.18).

Table 6.18 I would like to be a multi-skilling journalist when I am supported systematically.

Strongly agree	agree	Neutral	Disagree	Strongly disagree	Total
9	62	32	20	1	124*

*One respondent did not answer this question.

In terms of the respondent's position, four-fifths of senior editors (80%) agreed with the statement, whereas just more than half of the ordinary reporters (60%) and slightly less than half of sub-deputy and deputy editors (49.1%) agreed with the statement (Table 6.19).

Table 6.19 I would like to be a multi-skilling journalist when I am supported systematically.

Position	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
Reporters	2	28	11	9	0	50
Sub-Deputy & Deputy Editors	3	26	28	11	1	59
Senior Editors	4	8	3	0	0	15
Total	9	62	32	20	1	124*

*One respondent did not answer this question.

Regarding the DMB service, the head of the project, Lee also admits that the project team was not successful in inviting SBS journalists to participate in multimedia work. Although Lee wanted to settle multimedia work practices into a routine, he had no choice but to abandon the original goal, because he encountered resistance from journalists by introducing additional innovations such as the Command Room:

> The project team just paved a road to multimedia journalism and newsroom convergence, which is a global trend followed by major broadcasting companies in the world. That was the line I took on newsroom innovation (IT1, interviewed on 26 July 2007).

> Multimedia journalism including DMB, a data broadcasting service, has two sides. On the one hand, it would be very effective because news items can be reused through various outlets, on the other hand, it would drive journalists crazy as they were heavily overloaded with daily work. The solution is to increase the number of journalists to double the number or more (SR1, interviewed on 11 July 2007).

Less than one-third of respondents (31.2%) agreed with the statement that "SBS's programmes of multimedia, such as Internet and DMB, are better made than its competitors such as KBS and MBC", whereas a similar number of them (24.8%) did not think that their DMB service was superior to their competitors' services (Table 6.20).

Table 6.20 SBS's programmes of multimedia, such as Internet and DMB, are better made than its competitors such as KBS and MBC.

Strongly agree	agree	Neutral	Disagree	Strongly disagree	Total
1	38	55	29	2	125

6.3.2 Lack of understanding about newsroom convergence

Regarding newsroom convergence, SBS journalists did not have sufficient understanding (Table 6.21). More than one-third of the respondents (35.2%) answered that they did not understand what newsroom convergence was, and the proportion who claimed to understand newsroom convergence was less than half of all respondents (40%). While Singer (2004) observes that journalists around the world "are realising that they work for an information company" (p. 3), where they have to work with former rivals in the shared goal of publishing that information, this survey result shows that SBS journalists lagged behind those of most advanced countries in the world in understanding the practices of the converged newsroom.

Table 6.21 I understand what online and off-line newsroom convergence is.

Strongly agree	agree	Neutral	Disagree	Strongly disagree	Total
3	47	31	42	2	125

With regard to age, the older the journalists were, the more likely that they understood what newsroom convergence was. As shown in Table 6.22, more than half of those aged 40 or over (52.3%) agreed with the statement, whereas slightly more than one quarter of those aged under 40 (26.6%) agreed.

Table 6.22 I understand what online and off-line newsroom convergence is.

Age	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
Under 40	0	16	21	22	1	60
40 or over	3	31	10	20	1	65
Total	3	47	31	42	2	125

With regard to the respondent's position, the higher their positions were, the more journalists understood what newsroom convergence was. More than two-thirds of senior editors (68.7%) agreed with the statement. On the other hand, less than half of

sub-deputy and deputy editors (42.3%) and just slightly more than a quarter of ordinary reporters (28%) agreed with the statement (Table 6.23).

Table 6.23 I understand what online and off-line newsroom convergence is.

Position	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
Reporters	0	14	17	19	0	50
Sub-Deputy & Deputy Editors	0	25	12	20	2	59
Senior Editors	3	8	2	3	0	16
Total	3	47	31	42	2	125

Considering the lack of understanding about newsroom convergence, as shown above, it seems to be natural for the journalists to take a pessimistic view of the potential of newsroom convergence as a solution for coping with the competitive digital environment in the near future. Just a small number of respondents (15.5%) agreed with the statement that "Newsroom convergence is the best way to cope with the digital environment," whereas more than one-third of the journalists (39.2%) disagreed (Table 6.24).

Table 6.24 Newsroom convergence is the best way to cope with the digital environment.

Strongly agree	agree	Neutral	Disagree	Strongly disagree	Total
3	16	59	40	4	122*

*Three respondents did not answer this question.

With regard to age, more than one-third of those aged under 40 (36.2%) and those aged 40 or over (35.9%) disagreed with the statement. On the other hand, almost a quarter of those aged 40 or over (23.4%) agreed, while only four journalists aged under 40 (6.8%) agreed with the statement (Table 6.25).

Table 6.25 Newsroom convergence is the best way to cope with the digital environment.

Age	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
Under 40	0	4	33	20	1	58
40 or over	3	12	26	20	3	64
Total	3	16	59	40	4	122*

*Three respondents did not answer this question.

In terms of the respondent's position, senior editors (37.5%) showed the highest rate of agreement with the statement, while reporters (6.1%) had the lowest rate of agreement. On the other hand, sub-deputy and deputy editors (40.3%) showed the highest rate of disagreement, while senior editors (18.7%) had the lowest rate of disagreement (Table 6.26). In other words, this result shows that editors placed the highest value on newsroom convergence, whereas sub-deputy editors placed the lowest value on it.

Table 6.26 Newsroom convergence is the best way to cope with the digital environment.

Position	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
Reporters	0	3	28	18	0	49
Sub-Deputy & Deputy Editors	1	9	24	19	4	57
Senior Editors	2	4	7	3	0	16
Total	3	16	59	40	4	122*

*Three respondents did not answer this question.

6.4 The value of journalism: newsroom digitalisation is a successful editorial strategy

6.4.1 A successful editorial strategy

With the introduction of the digital news production system, Spanish broadcasting companies such as Telemadrid, Telecinco and Antenna 3 decided to "improve the competitiveness of the networks" (Aviles et al., 2004, p. 154). For example, Telecinco increased their competence as news producers, who were able to produce news content, which could be transmitted not only through television but also on the Internet and radio. On the other hand, Telecinco journalists were striving to take advantage of multiple accesses to all video material and the immediate use of the digital library to provide even more context about the news, so as to be more analytical and to explain to their viewers the reason those incidents happened.

Compared with the case of Telecinco, SBS journalists did not take advantage of the new system to increase their ability as news producers or to improve competitiveness.

They were not interested in producing news content for distribution via multimedia such as television, the Internet, mobile phones, DMB (digital multimedia broadcasting) and radio. Although SBS journalists admitted the advantage of multiple accesses to all video material and the instant use of the digital archive, they failed to make good use of the environment to provide much more background about what happened, so as to be more analytical and to explain to their viewers why those incidents happened. This is in contrast to the case of Antena 3 (Aviles et al, p. 94).

On the other hand, an absolute majority of SBS journalists (95.2%) agreed with the statement that overall the digitalised newsroom was a good idea, while only one journalist disagreed (Table 6.27). This indicates that the journalists changed their evaluation of the NDS project from a negative estimation to a positive one during the years since mid-2004.

Table 6.27 Overall the digitalised newsroom was a good idea.

Strongly agree	Agree	Neutral	Disagree	Total
25	94	5	1	125

In addition, a majority of journalists (83.2%) agreed with the statement that "Digitalisation will prove to be a successful editorial strategy for the news industry as a whole," while only 4% of journalists disagreed (Table 6.28). In other words, journalists admitted that digitalisation would contribute to better journalism in terms of the editorial dimension.

Table 6.28 Digitalisation will prove to be a successful editorial strategy for the news industry as a whole.

Strongly agree	Agree	Neutral	Disagree	Total
22	82	16	5	125

In terms of the respondent's position, more than four-fifths of senior editors (87.5%), sub-deputy and deputy editors (83.0%), and ordinary reporters (82%) agreed with the statement. On the other hand, only one senior editor, one sub-deputy and one deputy editor, and just three ordinary reporters (6%), disagreed with the statement (Table 6.29).

Table 6.29 Digitalisation will prove to be a successful editorial strategy for the news industry as a whole.

Position	Strongly agree	Agree	Neutral	Disagree	Total
Reporters	4	37	6	3	50
Sub-Deputy & Deputy Editors	12	37	9	1	59
Senior Editors	6	8	1	1	16
Total	22	82	16	5	125

Most SBS journalists thought that implementation of digitalisation was a success on the technology side but not in terms of organisation and systems. The majority of respondents (84.6%) thought that SBS newsroom digitalisation was a success in terms of technical innovation, while only 1.6% disagreed with this view (Table 6.30). This means that most journalists acknowledged the advantage of newsroom digitalisation a few years later, and this is a dramatic change considering their fierce resistance during the process of implementing the digital news production system.

Table 6.30 Implementing the digital system in SBS news was a success on the technical side, such as digitalisation in equipment and network.

Strongly agree	Agree	Neutral	Disagree	Total
18	87	17	2	124*

*One respondent did not answer this question.

In terms of the respondent's position, more than four-fifths of sub-deputy and deputy editors (86.4%), ordinary reporters (83.6%) and senior editors (81.2%) agreed with the statement. By contrast, only one ordinary reporter (2.0%) and one senior editor (6%) disagreed with the statement (Table 6.31).

Table 6.31 Implementing the digital system in SBS news was a success on the technical side, such as digitalisation in equipment and network.

Position	Strongly agree	Agree	Neutral	Disagree	Total
Reporters	5	36	7	1	49
Sub-Deputy & Deputy Editors	8	43	8	0	59
Senior Editors	5	8	2	1	16
Total	18	87	17	2	124*

*One respondent did not answer this question.

However, just less than one-third (32.8%) thought that the project was successful in terms of organisation and system innovation as well, whereas more than a quarter (27.2%) did not think the project was a successful innovation in the organisation and system side (Table 6.32). Lee, the head of the NDS project, said: "The SBS newsroom

digitalisation project is half success, and in terms of organisational innovation, it is a complete failure" (IT1, interviewed on 2 August 2007). In particular, he regretted that he had to abandon his ambitious plans such as establishing a Command Room and the new layout of the newsroom for journalists sharing common tables. The outcome of the questionnaire survey illustrates that SBS journalists also acknowledged the limited success of organisational innovation.

Table 6.32 Implementing the digital system was successful in revolutionising the organisation and system

Strongly agree	agree	Neutral	Disagree	Strongly disagree	Total
4	37	50	30	4	125

Almost three-quarters of respondents (73.3%) agreed with the statement that "SBS is better placed to serve the audience because of digitalised news operations," whereas less than one-tenth (9.6%) disagreed (Table 6.33).

Table 6.33 SBS is better placed to serve the audience because of digitalised news operations.

Strongly agree	agree	Neutral	Disagree	Strongly disagree	Total
9	82	21	10	2	124*

*One respondent did not answer this question.

In terms of the respondent's position, approximately three-quarters of senior editors (75%), sub-deputy and deputy editors (74.1%), and ordinary reporters (72%) agreed with the statement, whereas only a small number of ordinary reporters (8%), sub-deputy and deputy editors (8.6%), and senior editors (18.7%) disagreed (Table 6.34).

Table 6.34 SBS is better placed to serve the audience because of digitalised news operations.

Position	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
Reporters	2	34	10	3	1	50
Sub-Deputy & Deputy Editor	2	41	10	4	1	58
Senior Editors	5	7	1	3	0	16
Total	9	82	21	10	2	124*

*One respondent did not answer this question.

Some journalists thought that the better service was realised mainly through providing pictures edited with greater sophistication and well-chosen library materials which were superior to those of the competing broadcasting companies.

> With digitalisation, I think we became able to provide news pictures of better quality edited with the advanced technology of nonlinear editing. In addition, compared with other broadcasting companies, we now have better access to the materials through the well-organised archive systems. These changed and improved conditions, in my view, lead to better news for our audiences (JR8, 10 July 2007).

A considerable number of journalists insisted that SBS was superior to its competitor companies because it became able to share digitalised pictures simultaneously. In addition, Lee, the head of the project team, added the importance of the potential of picture sharing, which became possible thanks to newsroom digitalisation, interpreting the contribution of the new systems more comprehensively.

> In the past, the job of editors to screen the news stories had completely depended on their personal knowledge and experiences. However, now the process of screening became shared considerably even in terms of picture editing. This change has contributed, in my view, to improving the traditional authoritative and vertical structure of decision-making. Up to now, other than staff, except the journalists and camera crew who gathered the news, and the editor who screened the item, nobody was able to know in advance the content of each item until it was broadcast. Now anybody in the newsroom became able to monitor the process of news production, subsequently every item is inspected by everyone. I think this system will be very helpful in producing better quality news (IT1, 12 September 2007).

In addition, almost two-thirds of respondents (65%) thought that SBS implemented the digital newsroom so as to provide better information to audiences, while only about one-tenth of the journalists (10.4%) did not think so (Table 6.35).

Table 6.35 SBS implemented the digital newsroom for providing better information to the audience.

Strongly agree	Agree	Neutral	Disagree	Total
6	74	32	13	125

In terms of the respondent's position, the higher their position, the more they thought that the SBS implemented the digital newsroom so as to provide better information to the audience. For example, three-quarters of senior editors (75%) agreed with the statement, and following this group, almost two-thirds of sub-deputy and deputy editors (66.1%). In the case of ordinary reporters, just more than half of them (58%) agreed (Table 6.36).

Table 6.36 SBS implemented the digital newsroom for providing better information to the audience.

Position	Strongly agree	Agree	Neutral	Disagree	Total
Reporters	1	28	16	5	50
Sub-Deputy & Deputy Editors	4	35	13	7	59
Senior Editors	1	11	3	1	16
Total	6	74	32	13	125

On the other hand, there were also negative attitudes about the advantage of newsroom digitalisation. In particular, some journalists placed low value on the contribution of digital systems to news quality.

Regarding the speed of news transmission (see Section 2.7), SBS journalists' insight into this problem is not remarkable. An external expert who is a representative critic of newsroom innovation said: "The newsroom digitalisation of SBS is just the digitalisation of equipment and facilities. SBS had focused only on the efficiency of news production, rather than digitalisation of journalistic work processes" (EX2, interviewed on 28 August 2007).

On the other hand, as shown in Table 6.33, SBS journalists (73.3%) generally answered affirmatively to the survey question: "Do you think SBS is better placed to serve the audience because of digitalised news operations?" One senior journalist noted that:

> When breaking news happens, only SBS journalists can share the original picture simultaneously by virtue of the networked system. This means we can provide better pictures which were edited with sufficient time (JR10, interviewed on 11 July 2007).

6.4.2 Helpful to survive in the future

Four-fifths of journalists (80%) agreed with the statement that "The terrestrial TV news industry is in crisis," whereas only slightly more than one-twentieth of them (5.6%) disagreed (Table 6.37).

Table 6.37 The terrestrial TV news industry is in crisis.

Strongly agree	Agree	Neutral	Disagree	Total
25	75	18	7	125

With regard to age, more than four-fifths of those aged 40 or over (86.1%) and almost three-quarters of those aged under 40 (73.3%) agreed with the statement, while only 7.6% of those aged 40 or over, and just 3.3% of those aged under 40 disagreed (Table 6.38).

Table 6.38 The terrestrial TV news industry is in crisis.

Age	Strongly agree	Agree	Neutral	Disagree	Total
Under 40	10	34	14	2	60
40 or over	15	41	4	5	65
Total	25	75	18	7	125

In terms of the respondent's position, almost all of the senior editors (93.7%), more than four-fifths of sub-deputy and deputy editors (81.3%), and slightly less than three-quarters of ordinary reporters (74%) agreed (Table 6.39).

Table 6.39 The terrestrial TV news industry is in crisis.

Position	Strongly agree	Agree	Neutral	Disagree	Total
Reporters	8	29	13	0	50
Sub-Deputy & Deputy Editors	13	35	5	6	59
Senior Editors	4	11	0	1	16
Total	25	75	18	7	125

On the other hand, an absolute majority of the journalists (93.3%) agreed with the statement that "The implementation of the SBS digital newsroom will be helpful to survive in the multimedia environment in the future," whereas just three journalists (2.4%) disagreed (Table 6.40).

Table 6.40 The implementation of the SBS digital newsroom will be helpful to survive in the multimedia environment in the future.

Strongly agree	Agree	Neutral	Disagree	Total
23	94	5	3	125

In terms of age, a majority of those aged 40 or over (95.3%) and those aged under 40 (91.6%) agreed with the statement, while only one journalist aged under 40 and two journalists aged 40 or over disagreed (Table 6.41).

Table 6.41 The implementation of the SBS digital newsroom will be helpful to survive in the multimedia environment in the future.

Age	Strongly agree	Agree	Neutral	Disagree	Total
Under 40	6	49	4	1	60
40 or over	17	45	1	2	65
Total	23	94	5	3	125

With regard to the respondent's position, almost all of the sub-deputy and deputy editors (96.6%), senior editors (93.7%), and ordinary reporters (90%) agreed with the statement (Table 6.42).

Table 6.42 The implementation of the SBS digital newsroom will be helpful to survive in the multimedia environment in the future.

Position	Strongly agree	Agree	Neutral	Disagree	Total
Reporters	3	42	4	1	50
Sub-Deputy & Deputy Editors	11	46	1	1	59
Senior Editors	9	6	0	1	16
Total	23	94	5	3	125

6.5 Summary

This chapter investigated the impact of implementation of the digital system, focusing on the news production process, the newsroom organisation, multi-skilling innovation,

and the value of journalism. Regarding the changes in the news production process after newsroom digitalisation, the researcher found that a considerable number of journalists encountered the difficulties caused by some picture editors who lacked skill in nonlinear editing. In addition, the young journalists, who were usually skilled in IT, were less tolerant of clumsy picture editors.

Concerning the results of newsroom digitalisation regarding multi-skilling innovation, SBS journalists did not show much interest in multi-skilling, and they did not believe that multi-skilling allowed for a superior journalism. They never regarded multi-skilling as a prerequisite for their daily work.

As to the issue of the value of journalism, although SBS journalists admitted the advantage of multiple accesses to all video material and the instant use of the digital archive, they failed to make good use of the environment to provide much more background about what happened, so as to be more analytical and to explain to their viewers why those incidents happened. In the next chapter, the researcher summarises the main findings of the study, and then the academic and practical contributions, limitations of this research, and implications for future research are suggested.

Chapter 7 Conclusion

This study has examined how digital TV news production technology was adopted and used by the organisation and individual journalists within the SBS newsroom in Seoul, Korea. Chapter 4 of the thesis presented findings relating to the process by which SBS introduced the digital TV news production system into the SBS newsroom in terms of the organisation. Chapter 5 focused on findings relating to the process by which SBS introduced the digital TV news production system into the SBS newsroom in terms of individual journalists. Chapter 6 explored the consequences and implications of introducing the digital TV news production system in the SBS newsroom. The detailed findings of this study were presented in each chapter with empirical results. In this chapter, section 7.1 summarises and discusses the main findings of this study. Section 7.2 discusses the contributions of the study and section 7.3 discusses the limitations of this research. Finally, section 7.4 presents suggestions for further research.

7.1 Main findings of the study

7.1.1 Process of Implementing the Digital TV News Production System in Terms of the Organisation

Initially, the study set out to describe and understand the following research question: What was the process by which SBS introduced the digital TV news production system into the SBS newsroom in terms of the organisation? The analysis of in-depth interviews and in-house documents, and the questionnaire survey related to the process by which SBS introduced the digital TV news production system resulted in three main categories.

Firstly, the adoption process of SBS newsroom digitalisation was examined mainly through the analysis of the in-house documents and in-depth interviews. In February

2002, SBS made a plan to be a pioneer of TV news digitalisation among Korean broadcasting companies. In December 2003, SBS began to move into new headquarters and decided that while moving it would replace its out of date analogue news production equipment with a new digital system, which would provide SBS with both operational efficiencies and a platform for introducing new services in the future. The first SBS digital news programme was broadcast in February 2004 and all bulletins were on the air with the new system by June 2004. Therefore, the total project duration was two years exactly.

Secondly, then the innovation process at the organisational level was discussed. According to Rogers, (2003), the innovation process in organisations consists of five processes: Agenda setting – Matching – Redefining/Restructuring–Clarifying–Routinising (see Figure 2.1). The qualitative and quantitative analysis of the process of the SBS newsroom digitalisation resulted in four main categories. At the agenda-setting stage, seeing the inevitable digital trend, in 2002 the Chairman decided SBS would be the first adopter of a digital news production system in Korea. On the other hand, the project team decided to introduce additional goals such as replacing journalists' own desks with large tables for common use in the cause of efficiency. Later, these goals made journalists disillusioned with the original goal as such. In the end, the project team suffered a considerable loss of driving force while overcoming journalists' resistance aroused by these additional goals.

At the matching stage, the SBS project team presented five criteria for evaluating a bid including: (1) Tapeless production and editing; (2) Server-based editing with direct server play-out. At the redefining/restructuring stage, establishing the Command Room and removing journalists' own desks provoked widespread discontent among journalists. In the end, all the goals except the mechanical and technical systems of digital news production were relinquished or postponed indefinitely.

At the clarifying stage, the members of the Editing Units and the project team showed distinctive differences of point of view on the project. In March 2004, the conflict between the two camps reached its climax when SBS started to broadcast short news bulletins through the digital news production system as a test. The leaders of the two

camps had a heated discussion in the regular executives' meeting. In the middle of levelling criticism at each other, one of the two unexpectedly handed in his resignation and then left the meeting room indignantly.
At the routinising stage, SBS's additional innovations were abolished within less than one year. This supports Rogers (2003, p. 428) who observed that routinising is closely related to sustainability, the degree to which an innovation continues to be used after initial efforts to secure adoption are completed.

Thirdly, with regard to strategies for implementing the digital news production system, this study discussed strategies required to implement an innovation based mainly on Rogers' (2003) framework, at the same time employing Leonard-Barton's (1988) three strategies and Lin's (2007) four additional strategies (see Section 2.7). Regarding incentives, SBS should have considered policies for rewarding journalists. In contrast with SBS, a Taiwanese TV station ETTV provided monetary incentives and promoted excellent digital learners (Lin, 2007, p. 93). SBS innovation leaders did not think that incentives would play an important role in implementing newsroom digitalisation. As a result, the lack of incentives led to the limited success of the SBS project. With regard to training, the SBS project team thought the most important factor for digitalisation was human resources; the best way to develop the manpower was training and they duly offered the training courses.

In addition, regarding the user involvement, which is the first strategy of Leonard-Barton's three strategies, SBS journalists who were excluded from the important decision-making procedures did not feel that they were important in the process, and they had no choice but to assume the attitude of an onlooker. With regard to the supporters, the SBS project team did not have any champions or mediators to depend on, and this led them to experience great difficulties.

Concerning mutual adoption, the last strategy of Leonard-Barton's three strategies, SBS abandoned several innovations such as CG (computer graphic) which were originally designed to allow journalists to ask CG experts through the networked system in order to smooth the digital transition and fit their production process. Later, the SBS project team continued to undergo technological troubleshooting, debugging and relative technological modifications.

In the case of SBS, the communication and collaboration between the journalists and engineers was not so effective. Regarding the top management support, SBS's CEO and directors changed their attitude when the project encountered fierce resistance from the journalists, and they advised the head of the project to make a compromise. As a result of all this, the project team was destined to experience serious difficulties in the process of implementing newsroom digitalisation.

Concerning the gradual implementation, SBS was not very successful in making a soft landing because digital news production technology had never been used before in Korea. Furthermore, the project team, which began work in mid-2002, had to complete all the processes of implementation with a two-year deadline, by mid-2004. With regard to reducing the gap, there were serious problems of a "haves and have-nots" divide in digital technology skills. In particular, the gaps in skills between young SBS craft editors and older photographers proved to be wide.

7.1.2 The process by which SBS introduced the digital TV news production system into the SBS newsroom in terms of the journalist

Five stages in the individual innovation-decision

Using the Rogers (2003) model of five stages in the individual innovation-decision: knowledge, persuasion, decision, implementation, and confirmation, the study analysed the process by which SBS introduced the digital TV news production system into the SBS newsroom in terms of the journalist. Firstly, at the knowledge stage, the attitudes shown by the SBS journalists support Rogers' (2003) views that "knowing about an innovation is quite different from using it" (p. 174), and that, although people know about an innovation, when they do not think of it as pertinent to their situation or as prospectively helpful, they may not adopt that new idea.

Secondly, at the persuasion stage, the individual becomes more psychologically involved with the innovation, and he or she actively seeks information about the new idea, decides what messages he or she regards as credible and decides how he or she interprets the information that is received (Rogers, 2003, p. 175). SBS journalists who experienced the unexpected system crashes did not consider the information provided

by the project team as trustworthy and, consequently, they made a negative interpretation of the messages of the project team.

Thirdly, at the decision stage, SBS journalists did not have the chance to adopt or reject the digital news production project because the management had mandated it and this meant that if a journalist did not adopt the project, he could lose his job. As a result, they had no choice but "adoption" – defined as "a decision to make full use of an innovation as the best course of action available" – whereas they resisted the additional innovations, such as the introduction of a Command Room or removal of journalists' individual desks.

Fourthly, at the implementation stage, journalists were not able to understand why they had a duplicated command system, which embarrassed them. In a similar context, establishing the Information Support Centre was abandoned since it caused the most serious resistance from journalists who were forced to share tables instead of using their own desks, which were removed by the project team. In the end, newsroom digitalisation in terms of mechanical and technological innovation was the only innovation implemented, and all the other goals initially planned were discarded completely or returned to the previous state.

Finally, at the confirmation stage, SBS journalists were initially unenthusiastic about adopting NDS, because they were forced into it. In particular, the project team's promotion of the innovation was accompanied by thinly veiled threats of redundancies if anyone refused to accept it. Such dissatisfaction may come about because the innovation is inappropriate for the individual and does not result in perceived relative advantage over alternatives (Rogers, 2003, p. 190). SBS journalists had a feeling of dissonance about why SBS should run the risk of implementing new technology which had never yet demonstrated its stability.

Variables determining the rate of adoption of innovation

Subsequently, to understand the factors affecting the newsroom digitalisation, the analysis was constructed under Rogers' (2003) five variables determining the rate of adoption of an innovation: (1) perceived attributes of the innovation; (2) type of innovation decision; (3) communication channels; (4) nature of social system and (5)

extent of promotion efforts by change agents (see Figure 2.3). As mentioned earlier (see Section 2.6), the rate of adoption of an innovation can be "explained by five perceived innovation attributes: relative advantage, compatibility, complexity, trialability and observability" (Rogers, 2003, p. 221).

(1) Perceived innovation attributes: beneficial to their careers

Regarding relative advantage, more than half of SBS journalists perceived the digital TV news production system as being good for their careers. According to the outcome of the questionnaire survey in this study (see Table 5.10), 60.5% of respondents perceived the digital news production system as beneficial to their careers. In addition, almost three-quarters of respondents (72.8%) agreed with the statement that "The digital news production system was helpful in competing with journalists of the other broadcasting companies, such as KBS and MBC" (see Table 5.13).

With respect to compatibility, the interviewees of this study said that the desk-sharing system might have been acceptable if editors could have allowed them to work without coming back to the newsroom. In other words, they thought that the introduction of the innovation of desk sharing was premature because the reality was far from the ideal. In particular, the SBS project team failed to select a compatible innovation as the opening stage in a number of NDS innovations because the earlier initiatives, such as establishing the Command Room and removing personal desks, were entirely incongruent with existing routines (see Chapter 5, Tables 5.6, 5.7, 5.8, and 5.9). This supports the theory of Rogers (2003) which emphasised the usefulness of introducing a very highly compatible innovation, which can prepare the way for further less compatible innovations.

Concerning complexity, SBS journalists felt that it was difficult to learn how to use the new systems, which were complicated and lacked, ease of use. In the beginning, journalists tried to edit their own stories, however, they found the system had a significant weakness. Some interviewees said that the speed of data flow was too slow to support self-editing. Therefore, they used the system to a limited extent, and finally they gave up picture editing completely.

With respect to triability, both parties – the SBS project team and the journalists – shifted the responsibility for providing enough opportunities to try the system onto each other. The project team insisted that journalists passed up the chances offered, whereas journalists blamed the lack of time available for trying the digital system which was too complicated to learn in a short time. With respect to observability, while SBS journalists were provided with several opportunities to observe how the new digital systems worked, they did not feel interested in learning how they were operated. An interviewee said that SBS journalists did not understand why they should attend the class to train them because they did not want the new systems. They wanted the status quo and to use the existing systems as long as possible, which, they thought, had had no problems since they were introduced in 1990.

(2) Type of innovation decision

SBS's innovation decision might be regarded as an authority innovation decision because the project was initiated by the Chairman of the SBS media group, Yoon Se-young. However, the adoption by the organisation was one thing and the adoption process of individual journalists was another. The neglect of the latter, in other words, journalists' adoption, caused problems for the project team, such as indifference and resistance to all the innovations, including the digital news production system, and especially additional innovations like establishing a Command Room and introducing the desk-sharing system.

(3) Communication channels

The SBS project team did not understand the importance of interpersonal channels to cope with resistance or apathy on the part of individual journalists. Consequently, the project team employed the interpersonal channels to a limited extent. In response to the statement: "The SBS taskforce listened to the views of the journalists", more than two-thirds of respondents (68.3%) disagreed, while only 4% of journalists agreed (Table 5.17).

(4) Nature of the social system

Regarding the nature of the social system, this study found that the structure of the SBS newsroom impeded the diffusion of the innovation of digitalisation to a great degree. The SBS newsroom's well-developed social structure consists of hierarchical

positions giving individuals such as editors or an editor-in-chief the right to issue orders to journalists of lower rank. The interviewees said that the project team displayed authoritarian and oppressive behaviours, and essentially, they did not endeavour to suit the systems to journalists but required them to adapt to the new systems.

(5) Extent of promotion efforts by change agents

With regard to the extent of promotion efforts by change agents, the performance of SBS was not so successful, because senior staff were unable to help resolve conflicts between the project team and the journalists, who confronted the speed of adoption of the digital news production system, or between the IT unit and the engineering team, who disputed the responsibility for operating the news control room. An interviewee in this study said that the Korean newsroom organisation is very authoritarian and the SBS journalists and their organisation lack flexibility and they are likely to be contented with the situation as it is. In particular, their strong consciousness of kind impeded the adoption of new technology and led to resistance. Korean newsroom culture like this hinders the substantial development of the intrinsic value of journalism, while SBS did achieve a superficial advance such as the introduction of state-of-the-art technologies.

Nevertheless, the study suggests that newsroom digitalisation consequently led to greater democratisation of the organisational culture. For example, it made the interaction between management and the journalists or between the senior and junior journalists more egalitarian. In other words, both sides found that in any conflict, no one side was able to win completely and thus they could not help but compromise with each other.

Finally, this study investigated responses from SBS journalists and obstacles to the digital innovations. Many journalists thought it was ridiculous for SBS to be a pioneer in introducing the digital news production system in Korea because there were two broadcasting companies larger than SBS – KBS and MBC – which had enough human resources and generous budgets for such a project. In addition to the complaints about the Command Room and the instability of the new digital system made journalists completely disillusioned with the overall NDS project. As a result,

although they pretended to adopt the innovation, they longed in their hearts for a return to the old system.

7.1.3 Implications of newsroom digitalisation

This study investigated the implications of implementing newsroom digitalisation in four parts: changes in the news production process after newsroom digitalisation; changes in SBS newsroom organisation; the results of newsroom digitalisation regarding multi-skilling innovation; and the issue of the value to journalism focusing on news quality.

Regarding the changes in the news production process, journalists could change pictures more easily, and as seen at SBS, journalists could complete their items just before airtime. This supports the findings of Aviles et al. (2004) that with the introduction of the integrated digital newsroom, journalists could change pictures more easily, and this allowed them to "finish news stories closer to air-time" (p. 93). In addition, programme editors could have instant access to the items being written or picture edited by each journalist. This also supports the observation of Aviles et al. (2004) that editorial control matters in a digitalised newsroom (p. 95).

With regard to the changes in the newsroom organisation, SBS established three new jobs: ingesters, archive managers and system managers. On the other hand, they had to abolish three existing jobs: staff for videotape management, prompter controllers and personnel for subtitles. The SBS newsroom did not experience job reductions, however, because the digital news production system offered expanded news hours.

Concerning newsroom digitalisation and multi-skilling, according to Aviles et al. (2004), they were able to observe multi-skilling to some extent in all the networks studied. In particular, the Spanish newsrooms achieved further progress in this direction (p. 95). By contrast, SBS journalists did not show much interest in multi-skilling because they did not believe that multi-skilling allowed for superior journalism.

In regard to the value to journalism, although initially SBS journalists did not take advantage of the new system to increase their ability as news producers or improve competitiveness, an absolute majority (95.2%) of them thought that overall a digitalised newsroom was a good idea (see Table 6.27), and a majority of them (83.2%) thought that digitalisation would prove to be a successful editorial strategy for the news industry as a whole (see Table 6.28). In particular, the majority of respondents (84.6%) agreed with the statement that "Implementing the digital system was a success on the technical side" (see Table 6.30), whereas just under one-third (32.8%) thought that the project was successful in revolutionising the organisation and system (see Table 6.32).

Digital technology indicates, as Pavlik (2001) observed, significant change in how journalists collect and broadcast news (p. 115). This study investigated the implications of implementing newsroom digitalisation from the journalists' standpoint focusing on the change of the mindset of journalists who work in a stressful setting.

The media industry is, as Aquino et al.(2002) noted, extremely conservative, and remains strongly resistant to changes (p. 18). In particular, changes that influence deeply rooted practices and motivations tend to be instinctively rejected (Aviles et al., 2008, p. 230). In the same context, newsroom digitalisation was regarded as a radical innovation by SBS journalists, and eventually collided with the newsroom culture. Most of them felt annoyed with the change in existing practices because they were already overloaded with work preparing items for news bulletins. Furthermore, frequent crashes of the new digital news production system turned many journalists against the decision to adopt NDS.

What made matters worse was that the project team at SBS acted in an oppressive manner from the start. Their oppressive behaviour disillusioned journalists with the project. Although the team was pressed for time, they should have endeavoured to suit the systems to journalists. Consequently, SBS journalists felt that they were being forced to accept the adoption of the NDS and they thought that they did not have any right to decide whether to participate or not. This oppressive atmosphere in the newsroom caused anger and constant irritability, and journalists often felt as if they were about to explode.

However, the journalists have changed their evaluation of the NDS project from negative to positive during the years since mid-2004. An absolute majority of them found that overall the digitalised newsroom was a good idea. This means that most of them acknowledged the advantages of newsroom digitalisation a few years after its implementation. This is a dramatic change considering their fierce resistance during the process of implementing the project. They found that they became able to provide news pictures of better quality when edited with the advanced technology of nonlinear editing. In particular, compared with other competitors they had better access to materials through the well-organised archive systems. Furthermore, following the introduction of the new system, the process of news production became faster and easier. Especially when journalists were pressed for time to meet a deadline, they were able to more easily finish the editing, which is far different from how it used to be. These changed and improved conditions led to better news for their audiences. In the end, after they accepted that digitalisation was very useful to their work, they came to place a high value on the change even though they had initially fiercely resisted it.

Above all, the process of screening came to be shared even in terms of picture editing, and this change seemed to have contributed to improving the traditional authoritarian and vertical structure of the newsroom. In the past, the job of editors to screen news stories had completely depended on their personal knowledge and experiences. Moreover, Korean journalists and their organisations have lacked flexibility, and Korean newsrooms have had, as stated above (see Section 2.4.4) "the peculiar tradition of the hierarchical practices" (Kim, 2003, p. 23), which is rooted in Korea's traditional Confucian culture. As Kim (2003) observed, this "discouraged positive changes" (p. 23) in Korean newsrooms. In Korean culture, an authoritarian style still exists in practice because of the long history of authoritarian rule. Consequently, Korea has a combination of authoritarian and democratic features.

Accordingly, the study suggests that newsroom digitalisation consequently led to greater democratisation of the organisational culture. For example, it made the interaction between management and the journalists or between the senior and junior journalists more egalitarian. In other words, both sides found that in any conflict, no

one side was able to win completely, and thus they could not help but compromise with each other.

7.2 Contributions

This study has examined existing theoretical claims about the impact of new technology on news production by exploring journalists' views on these changes. In addition, this study sought to answer how individuals try to make sense of change, consider it in regard to their own place in the organisation, and integrate it with their sense of journalistic norms and professionalism. It also endeavoured to examine existing theoretical claims about the impact of new technology on news production. The study contributes to existing knowledge in several ways. Newsroom innovation is a "process," and this study's approach revealed the ebb and flow of change, its complexity and the inter-related nature of the organisational, journalistic and management variables.

Although much research has already been done on the topic of journalism and the production of news, little attention has been given to discussions of the impact of new technologies and new systems of working. In particular, implementation of the digital news production system is a subject area that leaves much to be learned because few researchers in journalism studies have thoroughly explored the topic of how diffusion of innovations affects the field of newsroom innovation.

To remedy this scarcity of studies investigating "journalists' voices," this study made a contribution towards the understanding of how individual journalists respond to newsroom innovations by examining the process of implementation and factors influencing the journalists' adoption of the innovation. In other words, this study offers a modest attempt through the examination of the changes in digitalised SBS newsrooms from the perspective of those on the inside.

The findings presented here offer insights into the process of introducing the digital news production system in a newsroom of SBS, a Korean national media organisation, the ways journalists are adapting to changes in production technologies, and the

changed system of working. The study's findings serve a practical purpose, giving new and useful knowledge to the newsroom innovation profession as a whole.

Given the existing literature on multi-skilling and newsroom convergence in general, and TV newsroom digitalisation literature in particular, this study has made three main contributions. Firstly, it has shown that the outcome of a newsroom digitalisation project is largely shaped by the leader of the project team. The study offers new findings on the influence of interpersonal communication channels and proximity to innovators in the adoption of new technologies among newsroom innovation practitioners. The study also suggested that the adoption of technology seems to be highly influenced by organisational culture.

Themes found in a study like this aid newsroom innovation practitioners in development of budgets, in staff planning, and in the creation of strategic objectives. The results of this study add a significant contribution to the literature in newsroom digitalisation and in diffusion of innovations. The findings of the current study showed that implementing new technology tends to meet resistance. In particular, established journalists are usually less willing to change what they have been doing in their careers so far.

The current study also suggests that if newsroom digitalisation is implemented along with other additional goals, such as replacing journalists' own desks with large tables for common use in the cause of efficiency, this is likely to make journalists disillusioned with the original goal as such. In the end, the project team will suffer a considerable loss of driving force while overcoming journalists' resistance caused by the need to accomplish these additional goals. Because of their ability to influence others, the use of people in leadership positions as change agents has often been presented as an effective implementation strategy. This research indicates that this does not appear to hold in the case of implementing newsroom digitalisation by middle managers.

Newsroom organisations may need to concentrate on the "people" aspects of facilitation, namely persuasion and training. Further, this research found that even within the people aspects, the effects of persuasion and training are markedly different.

Persuasion has a far stronger influence on usage than training. Training, on the other hand, was not considered to be as crucial by the SBS journalists. One of the reasons for this may be the fact that Korean journalists are generally familiar with digital technologies. The study has also made several contributions to the literature on newsroom innovation. First, the researcher drew upon the innovation literature for a framework to examine an issue of growing concern as news organisations in the world invest increasing amounts of funds in introducing the digital news production system successfully.

Regarding the methodological contributions, this study examined the process of implementing the digital news production system by employing both qualitative and quantitative methodology. Incorporating the results of the qualitative and quantitative analysis certainly gave the researcher a more accurate and reliable description of the studied phenomenon, the implementation of the digital news production system.

Regarding the practical contributions, the results of this study suggest that introducing the digital news production system should be a gradual process, allowing the employee to meet his/her desired schedule. If changes are introduced radically, the difficulties of adapting to it should be dealt with by discussing the situation with the journalists openly and by offering them opportunities for retraining. Technological designers should cooperate with the users in order to gain more understanding of the context in which technology is used. Workers whose jobs are affected by technological change should define their motivations and goals, as well as needs for training and determine a schedule that enables them to transfer to using the new technology and/or working practices.

This study suggests that newsrooms that are considering introducing a digital news production system in the near future have to find the most suitable model for their own newsrooms because there is no single, static way to implement newsroom digitalisation. The empirical findings of this study not only contribute to the literature in implementing the digital TV news production system and diffusion of innovations, but also its findings are useful to organisations all over the world planning to adopt and implement newsroom digitalisation.

7.3 Limitations

This study has limitations as to the generalisability of its findings. In addition, although the researcher did his best, the implicit biases and shortcomings of the research could not be eliminated. This section provides a summary of the limitations of this research project.

Critics point to lack of generalisability, which, as defined by Lee and Baskerville (2003) is, "the validity of a theory in a setting different from the one where it was empirically tested and confirmed" (p. 221), as a primary hindrance for a case study methodology. Case studies, part of the scientific methodology, are of great value in refining theory, suggesting complexities for further investigation and helping to establish the limits of generalisability (Stake, 2005).

With only a small sample size of 125 journalists, this case study does not generalise to other contexts, but it provides exploratory and insightful information that may shed light on future study on adopting similar core production technology in stressful working settings.

The aim of this research was to improve understanding of the process of newsroom digitalisation; and the researcher therefore limited the scope of the study to the process of introducing the digital news production system in terms of the organisation and the individual journalist, and the impact of newsroom digitalisation at SBS, which is the only case of introduction of a full-scale digital news production system among Korean TV broadcasting companies to date.

This limitation of the scope of the study helped the researcher to provide a meticulous description of the dynamics of the SBS newsroom, and to grasp clearly what was happening in the research site. Nevertheless, it also meant that, rather than multiple cases, a focus on just one case is obviously an additional bias which decreases the

generalisability of the research findings. This compromise between detailed access and generalisable findings is one almost all research studies face. Accordingly, the researcher has tried to keep this bias in mind when discussing the implications of the study's findings.

However, as with all research methods, there are strengths and weaknesses. First, the limitations of the questionnaire survey include: the fact that it was only a snapshot of the situation in 2007, when field research was conducted with regard to the implications of the SBS newsroom digitalisation implemented in 2004, and sampling biases caused by the small-scale newsroom, which has fewer than 150 journalists.

These limitations were, however, transcended to a substantial degree because the in-depth interviews, participant observation, and analyses of documents balanced the weaknesses intrinsic to the questionnaires. Thus the overall survey provided a far more multi-faceted view of the situation at the time of the field research, i.e., in 2007, when approximately three years had passed since the newly digitalised TV news production system was introduced in 2004.

The detailed case study based on the findings of the questionnaire survey gave the researcher the opportunity to acquire abundant data. The understanding of the detailed case study was triangulated with the knowledge acquired from the survey data to gain a more complete notion of the implications of newsroom digitalisation in SBS.
On the other hand, this study suffered from reliability problems due to the small scale of the research site. In particular, Cronbach's alpha identified nine response items out of 41 items of Group A, and all nine items of Group B, as problematic.

By eliminating these items from analysis (see Appendix 1 and Appendix 4), the researcher was able to bring Cronbach's alpha up to an acceptance standard (larger than 0.7, see Section 3.6). However, it inevitably eliminated some key response items, including those specially designed to examine whether there was resistance by news reporters to the new digital system in 2004 and whether the reporters had to face pressure in cooperating with digitalisation, even though the researcher did not want to lose them.

There is concern that new working practices are threatening, as Aviles et al. (2004) observe, certain "core journalistic values such as accuracy and the ability to go out on a story" (p. 98), which need to remain constant. Nevertheless, focusing on the process of newsroom digitalisation, this study paid scant attention to this point, even in chapter 6, which discussed the consequences of the implementation of new technology.

Furthermore, the study was not able to explain exactly what made the difference between SBS, which encountered fierce resistance in the process of innovation and broadcasting companies in the UK and Spain where, as Aviles et al. (2004) observed, there "appeared to be little dissent about the introduction of new technology expressed in newsrooms" (p. 98).

7.4 Suggestions for further research

Given the nature of this research and the fields dealt with, there are a great number of research approaches which could be taken into consideration in succeeding studies. In this section, the researcher points out those which are particularly pertinent to the study. One direction of future research might be to validate the findings with a larger sample in more established organisations in the Korean broadcasting industry, such as KBS and MBC, comparing the results of this research study. Another direction of future research might be that the results of this research could be applied to other innovations in the broadcasting industry, e.g. multi-skilling or newsroom convergence.

Furthermore, even different industries like the Korean newspaper industry can take advantage of this research as, in June 2009, the Korean National Assembly ratified the Media Reform Bills (the Media Law) which sought to lift the decades-old ban on newspapers and large firms operating broadcasting companies and set generous ceilings for their ownership of television networks. Subsequently, in the near future, journalists in newspaper companies will experience a kind of revolution in their working practices.

On the other hand, future researchers could advance the examination of newsroom digitalisation by finding new ways to quantify studies of digitalisation. There are

several cases of previous endeavours, such as Aviles and Leon (2002), but they are primarily surveys of how journalists and managers are coping with the new technological innovations and what their outcomes are, without applying proper quantitative approaches. Additional quantitative studies could concentrate on the accomplishment of goals within a digitalised newsroom and quantifiable results like productivity, efficiency and cost savings.

This kind of data could be used to galvanise the discussion on whether newsroom digitalisation is effective and successful or not. In addition, quantitative research could clarify the advantages of a digital news production system and the current and future situation of the journalists under the new digital system. It is difficult to predict how digital systems in major news companies, which remain in embryonic stages of development, will develop. Nevertheless, it could be, as Klinenberg (2005) estimated, that "the political economy, cultural conventions, and regulatory restrictions governing the news industry" (p. 62) will play powerful roles in determining how advanced communications technologies enter the matrix of journalistic production, just as they did before the digital age. Subsequently, to investigate these factors could also be challenging for future studies.

Appendix 1 Survey Questionnaire*

A. Please check the box that reflects your opinion.

The following questions are about the changes that happened after newsroom digitalisation at SBS.

1. Implementing the digital system in SBS news was a success on the technical side, such as digitalisation in equipment and network.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

2. Implementing the digital system was successful in revolutionising the organisation and system

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

3. I would like to return to the analogue system.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

4. I became more interested in picture editing after the digital television newsroom. was implemented.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

5. I have edited my own news stories after implementing the digital system.

① ( ) Yes	② ( ) No	③ ( ) No option

6. The editors became more concerned and watchful over picture editing after implementing the digital television newsroom.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

Following questions are about your evaluation of the implementation of the SBS digital system

7. Working in a digitalised newsroom environment is good for my career.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

8. SBS is better placed to serve the audience because of digitalised news operations.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

9. The digital news production system was helpful in competing with journalists of the other broadcasting companies, such as KBS and MBC.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

10. Establishing the command room was a realistic idea.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

11. Removing SBS journalists' own desks and making reporters share a table was a realistic idea.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

12. It was the right choice for SBS to fit each car with the GPS system in 2004.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

13. The SBS project team accepted enough opinions from the journalists.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

14. The innovation of the SBS newsroom organisation was radical.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

15. There was an oppressive atmosphere among the journalists in making the digitalised newsroom.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

16. News reporters resisted the new digital system.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

17. Instability in system was the biggest dissatisfaction when the digital system was first implemented.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

18.Even though I had training in digitalisation, I still felt I did not have enough time to try it.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

19. I felt frustrated because of the digital system's technical difficulty.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

20. I have asked for a more skilled picture editor than the picture editor who has been assigned to me after the introduction of SBS News Digital System.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

21. Young SBS journalists around the age of 30, who were familiar with digital technology, adapted to the digital news system more quickly than those who were older than them.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

22. I have experienced difficulty in picture editing with the senior cameramen who were not yet skilful enough to edit pieces with the NLE editing system.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

23. Even though I had training on digitalisation, I still felt I did not have enough time to try it.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

24. I was unenthusiastic when the digital system was first implemented even though no other TV broadcasters have ever done it.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

25. Overall digitalised newsroom was a good idea.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

26. Digitalisation will prove to be a successful editorial strategy for the news industry as a whole.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

27. I faced pressure to cooperate with digitalisation even though I did not want to.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

28. SBS implemented the digital newsroom for providing better information to the audience.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

29. Implementing the digitalised system was for economic reasons rather than better journalism.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

30. SBS's digitalisation of the newsroom was intended to reduce staff.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

31. The wrongful explanatory title, the president Roh Moo-hyun's impeachment was due to the SBS news digital system's failure.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

Following questions are about multitasking such as journalist editing

32. Multitasking will raise concern about the quality of output.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

33. Multitasking will become a necessary requirement for a journalist in the future.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

34. I would like to be a multitasking journalist when I am supported systematically.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

Following questions are about multimedia news production

35. The terrestrial TV news industry is in crisis.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

36. I would like to write on the SBS website before it aired on TV when I have an exclusive story.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

37. SBS's multimedia programmes such as Internet and DMB are better made than its competitors such as KBS and MBC.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

38. SBS should devote more in making multimedia news production.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

39. The implementation of the SBS digital newsroom will be helpful to survive in the multimedia environment in the future.
42 The implementation of the SBS digital newsroom will be helpful to survive in the multimedia environment in the future.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

Following questions are about online and off-line newsroom convergence

40. I understand what online and off-line newsroom convergence is

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

41. Newsroom convergence is the best way to cope with the digital environment.

① ( ) Strongly agree	② ( ) Agree	③ ( ) Neutral	④ ( ) Disagree	⑤ ( ) Strongly disagree

B. Please check the box that reflects your opinion.

1. Choose the field(s) which became convenient after implementing the digital system (One or more answers are allowed)

(1) Writing a text	
(2) Camera work	
(3) Editing pictures	
(4) Computer graphics	
(5) News operation	
(6) Searching archives	
(7) Others	

(Please explain)	

2. Choose the field(s) which became inconvenient after implementing the digital system (One or more answers are allowed)

(1) Writing a text	
(2) Camera work	
(3) Editing pictures	
(4) Computer graphics	
(5) News operation	
(6) Searching archives	
(7) Others (Please explain)	

3. Which one of the following was achieved after the introduction of SBS digital news system? (One or more answers are allowed)

(1) Economical efficiency from multitasking	
(2) Convenience of NLE (Non linear Editing)	
(3) Pursuing quality pictures	
(4) Efficiency of network system	
(5) Cutting down on the budget of news production	
(6) Quickness of news production	

4. How long did it take for you to get used to the SBS digital system?

(1) Less than One month	(2) 1 to 3 months	(3) 4 to 6 months	(4) 7 ~~month s~~ to 12 mon ths	(5) More than one year

5. The following are the goals of implementing digitalisation set by SBS. Which one do you think was achieved most successfully?

(1) Making SBS more powerful media through the digital system	
(2) Making the SBS news operation more cost-efficient	
(3) Multiple management through one-source multiuse	
(4) Coping with the changing environment actively	
(5) None	

6. The following are the important factors of the SBS digital system. Which one do you think is achieved most satisfactorily?

(1) Multiple accesses to all video material	
(2) Picture editing through the digital system	
(3) Developing the new NRCS (News Room Computer System)	
(4) Transmitting news through the automation of news centre	
(5) Implementing the digital archive system	
(6) None	

7. Which areas should SBS improve immediately in the digital news system?

(1) NRCS (Newsroom computer system)	
(2) NLE (Non-linear editing system)	
(3) Storage capacity	
(4) APM (Automated programme management)	
(5) Searching archives	
(6) Stabilisation of the digital news system	
(7) Others (Please explain)	

8. If the terrestrial news industry is in crisis, what are the causes behind this? (Choose every possible answer)

(1) Advent of new media environment	
(2) Change of patterns of news consumption	
(3) Preference of Internet over traditional media	
(4) Lack of coping with the changing environment	
(5) Others (Please explain)	

9. What is the level of SBS newsroom convergence?

(1) Very early stage	
(2) Early stage	
(3) Average stage	
(4) Advanced stage	
(5) Very advanced stage	

C. Please provide the following personal data

1. What is your gender?

(1) Male	(2) Female

2. How old are you?

(1) 20s	(2) 30s	(3) 40s	(4) 50s	(5) Older than 60

3. What is your education level?

(1) BA degree	(2) MA degree	(3) PhD degree

4. What is your position in SBS?

(1) Reporter	
(2) Deputy Sub Editor	
(3) Sub Editor	

(4) Editor	
(5) Deputy Editor-in-Chief	
(6) Editor-in-Chief	
(7) Executive Director	
(8) Others	

5. What is your department in SBS?

(1) Editorial Desk	
(2) Political Desk	
(3) Economy Desk	
(4) Life and Economy Desk	
(5) City Desk 1	
(6) City Desk 2	
(7) Culture and Science Desk	
(8) International News Desk	
(9) Future and Vision Desk	
(10) Internet News Desk	
(11) Depth News Desk 1	
(12) Depth News Desk 2	
(13) Administration ~~s~~	
(14) Others	

6) How long have you worked in SBS?

(1) 4 years since joining SBS (joined SBS in Autumn 2003 when the News Digital System was first introduced)	
(2) 5-10 years	
(3) 11-15 years	
(4) 16-20 years	
(5) 21-25 years	
(6) Longer than 26 years	

Thank you for answering this survey. I appreciate your help.

Appendix 2 Participant Information Form

Hello:

Thank you for accessing this survey. This survey is in no way an attempt to sell anything. It is an academic survey about the diffusion and use of new technologies in journalism. The purpose of the research is to investigate the Digitalisation of SBS TV Newsroom.

This is purely academic research, and your responses are confidential. In accordance to the University of Sheffield Research Ethics Committee requirements, I have included a consent form. This form explains the names of the researchers, privacy and confidentiality issues, etc.

Investigators:

The following investigators are available for questions about this study
(Monday-Friday, 9:00 a.m. - 4:30 p.m.)
Jong-Ha Na, Mobile phone: 010-935-0617/ 031-921-0617 (Home)
njh58won@hanmail.net

Risks: No apparent risks are expected to occur.

Right to Refuse: Subjects may elect not to participate in the study or to withdraw from the study at any time without penalty or loss of any benefit to which they might otherwise be entitled.

Privacy: Results of the study may be published, but no names or identifying information will be included in the publication. Subject identity will remain confidential.

Signatures: The study has been described to me. I understand that additional questions regarding the study should be directed to the investigators listed above.

I agree to participate in the study described above and acknowledge the investigator's obligation to provide me with a signed copy of this consent form.

_____ _____

_____

Name of Participant Date Signature

Appendix 3 Participant Consent Form

Title of Project: Digitalisation of a TV newsroom: A study of SBS, South Korea

Name of Researcher: Mr Na Jong-Ha

Participant Identification Number for this project:

Please initial box

1. I confirm that I have read and understand the information sheet Dated:____ ____ 2007 for the above project and have had the opportunity to ask questions. ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason. ☐
3. I understand that my responses will be anonymous before analysis. I give permission for members of the research team to have access to my anonymous responses. ☐
4. I agree to take part in the above research project. ☐

Name of Participant (*or legal representative*)	Date	Signature

Mr Jong-Ha Na

Researcher

Date	Signature

* One copy for the participant and one copy for my Supervisor

Appendix 4 Item-Total Statistics

No	Key words of items in the questionnaire	The serial number of items	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
1	Technical	1	85.35	70.874	.233	.452	.716
2	Organisation	2	84.41	67.253	.362	.559	.706
3	interested	4	84.97	68.364	.394	.430	.706
4	edit	5	83.91	67.026	.296	.457	.710
5	concerned	6	84.17	67.674	.321	.338	.709
6	career	7	84.99	67.887	.371	.463	.706
7	serve	8	85.11	67.805	.428	.551	.704
8	competition	9	85.18	67.958	.436	.573	.704
9	commanding	10	83.44	69.135	.241	.381	.714
10	removing	11	83.22	69.162	.279	.381	.712
11	GPS	12	83.66	68.767	.187	.355	.719
12	opinions	13	83.63	67.366	.477	.458	.702
13	instability	17	85.15	72.544	.008	.273	.729
14	training	18	84.47	67.416	.353	.341	.707
15	skilled	20	84.44	71.049	.077	.407	.727
16	young	21	85.46	71.242	.214	.445	.717
17	difficulty	22	84.84	72.880	-.015	.417	.730
18	try	23	84.73	70.702	.123	.226	.722
19	unenthusiastic	24	84.35	69.552	.161	.357	.721
20	overall	25	85.52	70.530	.345	.557	.712
21	strategy	26	85.34	68.573	.410	.703	.706
22	audience	28	84.97	68.495	.367	.469	.708
23	wrongful	31	84.41	72.087	-.002	.307	.736
24	requirement	33	84.87	68.218	.332	.362	.709
25	supported	34	84.80	68.317	.291	.397	.711
26	crisis	35	85.30	71.813	.078	.364	.723
27	exclusive	36	83.56	70.179	.140	.295	.722
28	DMB	37	84.42	69.533	.232	.290	.715
29	devote	38	85.25	68.537	.374	.503	.707
30	survive	39	85.46	71.172	.222	.501	.716
31	understand	40	84.44	70.335	.138	.265	.721
32	best	41	84.15	71.013	.123	.444	.721

*9 items were eliminated from analysis out of 41 items of Group A, and all 9 items of Group B to increase the Cronbach's alpha value higher than 0.7. The serial numbers of the 9 items are: 3, 14, 15, 16, 19, 27, 29, 30, 32 (see Section 3.4.2 and Appendix 1).

Appendix 5 Interviewees*

No	Date & time	Length	Interviewees	Positions
01	2007/07/11 22:00	00:30:45	SR1	Senior Reporter
02	2007/07/08 22:09	00:25:52	SR2	Senior Reporter
03	2007/07/10 16:37	00:37:59	SR3	Senior Reporter
04	2007/07/10 22:31	00:19:35	JR1	Junior Reporter
05	2007/09/13 18:46	00:46:25	SR14	Senior Reporter
06	2007/07/23 15:29	00:54:54	SR4	Senior Reporter
07	2007/07/26 15:14	00:46:18	IT1	IT staff
08	2007/08/24 15:34	00:36:06	JR3	Junior Reporter
09	2007/08/30 14:24	01:21:55	EX1	Junior Reporter
10	2007/09/06 10:41	01:19:11	IT3	IT staff
11	2007/09/12 15:11	00:04:31	IT1	IT staff
12	2007/09/14 10:26	00:48:05	JR9	Junior Reporter
13	2007/09/06 10:00	00:43:09	SR5	Senior Reporter
14	2007/06/20 16:57	00:25:22	JR4	Junior Reporter
15	2007/06/22 21:17	00:29:01	JR5	Junior Reporter
16	2007/07/08 22:55	00:41:49	JR6	Junior Reporter
17	2007/07/10 23:06	00:23:37	JR7	Junior Reporter
18	2007/07/19 13:54	00:40:06	SR6	Senior reporter
19	2007/07/23 17:30	01:12:11	PE1	Picture editor
20	2007/07/26 16:22	01:24:11	IT4	IT staff
21	2007/08/28 15:12	02:25:09	EX2	IT expert
22	2007/09/12 15:18	00:01:31	IT1	IT staff
23	2007/09/14 11:16	00:10:11	IT6	IT staff
24	2007/06/18 16:31	00:15:16	PE2	Picture editor
25	2007/06/22 21:46	00:05:51	JR5	Junior Reporter
26	2007/07/08 23:51	00:47:29	SR7	Senior reporter
27	2007/07/10 23:42	00:18:31	JR8	Junior Reporter
28	2007/07/19 15:10	00:28:20	SR8	Senior reporter
29	2007/08/12 15:04	01:28:37	IT1	IT staff
30	2007/09/12 15:34	00:16:48	PE2	Picture editor
31	2007/06/21 14:10	00:41:18	SR9	Senior reporter
32	2007/07/19 16:07	00:48:54	SR10	Senior reporter
33	2007/08/02 17:00	00:54:19	SR10	Senior reporter
34	2007/06/18 16:50	00:39:28	PE2	Picture editor
35	2007/09/12 16:01	00:54:11	PE1	Picture editor
36	2007/08/03 16:18	01:05:14	SR4	Senior reporter
37	2007/09/12 17:11	00:26:22	CC1	Camera crew
38	2007/09/13 15:35	00:48:28	EX3	Senior reporter
39	2007/09/13 16:34	00:08:02	EX3	Senior reporter
40	2007/09/13 17:36	00:11:11	JR11	Junior Reporter
41	2007/09/13 17:57	00:13:10	SR12	Senior Reporter
42*	2007/09/13 18:46	00:46:25	SR13	Senior Reporter

*The number of interviews was 42. Interviewees were 33 people in total, and a few of them held follow-up interviews once or more. The numbers next to interviewees' names show how many times they were interviewed.

Appendix 6 Interview schedule

1	Do you think implementing the digital system in SBS news was a success on the technical side, such as digitalisation in equipment and network?
2	Do you think implementing the digital system was successful in revolutionising the organisation and system?
3	Do you think you became more interested in picture editing after implementing the digital television newsroom?
4	Have you edited on your own after implementing the digital system?
5	Do you think the editors became more concerned and watchful over picture editing after implementing the digital television newsroom?
6	Do you think working in a digitalised newsroom environment is good for your career?
7	Do you think SBS is better placed to serve the audience because of digita lised news operations?
8	Do you think the digital news production system was helpful in competing with journalists of the other broadcasting companies, such KBS and MBC?
9	Do you think establishing the commanding room was a realistic idea?
10	Do you think removing SBS journalists' own desks and making reporters share a table was a realistic idea?
11	In the year 2004, SBS fitted each car with the GPS system. Do you think this was the right choice?
12	Did the SBS taskforce accept enough opinions from the journalists?
13	Was system instability the biggest dissatisfaction when the digital system was first implemented?
14	Were you given enough training for adapting to the news digital system?
15	Have you ever asked for a more skilful picture editor than the editor who was signed to you after the introduction of SBS News Digital System in 2004?
16	Do you think that young SBS journalists around the age of 30, who were familiar with digital technology adapted to the digital news system more quickly than those who were older than them?
17	Have you experienced difficulty in picture editing with the senior cameramen who were not yet skilful enough to edit pieces with NLE
18	Even though you had training on digitalisations, do you still feel you had not enough time to try it?
19	Were you unenthusiastic when the digital system was first implemented even though no other TV broadcasters have ever done it?
20	Do you think overall digitalised newsroom was a good idea?
22	Do you think SBS implemented digital newsroom for providing better information to the audience?
23	Do you think the wrongful explanatory title President Roh Moo-hyun's impeachment was due to the SBS news digital system's failure?
24	Do you think multitasking will become a necessary requirement for a journalist in the future?
25	Would you like to be a multitasking journalist when you are supported systematically?
26	The terrestrial TV news industry is in crisis.
27	Do you think you should write on the SBS Internet before it is aired on TV news site when you have an exclusive story?

29	Do you think SBS should devote more time and effort in making multimedia news production?
30	Do you think the implementation of the SBS digital newsroom will be helpful to survive in the multimedia environment in the future?
31	Do you understand what the online and off-line newsroom convergence is?
32	Do you think the newsroom convergence is the best way to cope with the digital environment?
33	Would you like to return to the analogue system?
34	Do you think the innovation of the SBS newsroom organisation was radical?
35	Do you think there was an oppressive atmosphere among the journalists in making the digitalised newsroom?
36	Did news reporters resistance to the new digital system in 2004?
37	Do you feel frustrated because of the digital news production system's technical aspects?
38	Do you face pressure in cooperating with digitalisation even though you did not want to?
39	Do you think implementing the digitalised system was for economic reasons rather than for better journalism?
40	Do you think SBS's digitalisation of the newsroom was intended to reduce staff?
41	Do you think multi-skilling will raise concern about the quality of output?

Appendix 7 Researcher's role at SBS

In January 2003, the head of the News Digital System (NDS) project team asked me to be the liaison officer for him because he was not able to find anyone else. Although I did not want the post, I felt I had to accept it. I was not able to tell the head of the project that I would be leaving SBS soon. If I had done so, I would have been at a disadvantage until my last day on the job. I left SBS in June 2003, so was liaison officer for a period of six months only.

I do not have a friendly relationship with the project head, who is three years senior to me. When I worked for the mobile news coverage, an investigative news squad, the project head was the chief editor. During that period, I became disillusioned with the head's authoritative manner.

However, when I started this study, the project head supported me as much as possible. I felt that he had always wanted his project to be known to as many people as possible. The reason he helped me was that he was eager for others to know of his importance in this project. Whether the project head helped me with good intentions or not, I cannot help but acknowledge how much I owe him professionally and in respect of this study.

I have an ambivalent attitude towards the project head, and this is why I could assume a relatively independent attitude towards him in conducting this study. On the other hand, because I was the liaison officer for a period of six months, I gained inside knowledge about the progress of the digitalisation project that I might not have otherwise had. However, I did not become involved in the project as a whole because I was only acting as liaison officer for a short period, and my duties as the liaison did not bring me into close contact with the people working on the project.

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