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Changes of journalistic practices and workflow in integrated television newsrooms: A multiple case study of early adopters in Taiwan¹

Abstract

This multiple case study gathered in-depth interview data from sixty-seven TV news professionals in three early adopters of integrated newsrooms in Taiwan in addition to overt observations of newsroom dynamics and work interactions. This study explicates the digital workflow after implementing the integrated newsroom and delineates the changes of adding key steps in TV news production (i.e., ingestion, nonlinear editing, and cross-platform distribution). It also elaborates many work adjustments in audiovisual production and postproduction. Tape-related work roles (e.g., video journalists) have encountered dramatic alterations in their ways of news making. After news digitization, reporters and video journalists are found to collaborate closely in video editing. Additionally, most interviewees think that multi-skilling resulted from optimizing digital news workflow does not deteriorate quality of news content. Although initial system breakdowns brought labor pains to newsmaking, newsroom conflicts were reduced after ironing out implementation difficulties. Finally, the implications of the impact of organizations' characteristics on implementing integrated newsrooms are discussed.

KEYWORDS: integrated newsroom, TV digitalization, digital news, workflow, news production, multi-skilling

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Introduction

TV newsmaking has been gradually shaped by computing and network technologies such as digital text systems, computerized character generation, nonlinear video editing, and digital broadcasting servers. The technological transformation has brought challenges of journalistic practices and news production to reporters, producers, and news workers. The fully digital tapeless TV news system, termed the “integrated TV newsroom” (Powell, 1998), can be regarded as the third revolution (film replaced by videotape, and now videotape by digital files). Integrated TV newsrooms are effective for sharing abundant audiovisual resources, producing news with sophisticated visual aids, and repurposing digital content for multiple platforms such as PCs, PDAs, and mobile phones (Chou & Ju, 2005; Ke, 2006). Previous global rollouts of integrated newsrooms show that no single universal technological standard or infrastructure fits all circumstances and implementation outcomes vary widely (Rees, 2000). Due to technological advancements, integrated newsroom technology in recent years has performed reliably which motivates more TV stations to make the digital leap.

Technological developments have changed journalistic practices ([Pavlik, 1999](#)) - in news-gathering and reporting for example - and even transformed the nature of journalism itself (Bromley, 1997). Others observed that digitalization has shaped the production and post-production process at some TV stations by transforming news production into a completely tapeless process (Chen, 2003; Yen, 2005). Transiting from analog to digital production, TV news workers adapted new workflows of news gathering, news production and news distribution (Lin, 2012). Several researchers argued that the implementation of a digital TV newsroom blurred the distinction between journalists and technicians and contributed to a growing trend toward multi-skilling ([Aviles & Leon, 2002](#); [Aviles et al., 2004](#); [Ursell, 2001](#)). TV news departments which adopted integrated newsroom technology earlier faced implementation barriers from technical problems (e.g., system crashes and debugging) to organizational challenges (e.g., work adjustment and division restructure) (Lin, 2012). Most TV stations found that

implementing digital newsrooms caused intense “labor pains” resulting from changes in the traditional workflow, technology, and newsroom structure ([Lin & Davidson, 2007](#); Lin, 2012).

Expanding on prior studies regarding the impact of digitalization on newsmaking, this study investigated how implementing integrated TV newsrooms shaped journalistic practices, workflows, and news production process in early adopters. The three cases are situated in highly competitive Taiwanese news industry in which fifteen TV stations produce news programming. In addition to overt observations, this multiple case study conducted in-depth interviews with sixty-seven news professionals in the early adopters which implemented integrated TV newsrooms successfully. Since little research has been conducted about changes caused by implementing integrated newsrooms, the findings can not only shed light on theorizing the impact of adopting similar digital technology on workflows and journalistic practices but also provide empirical insights of implementation for other TV stations to make optimal plans for transitioning to tapeless news production.

Literature Review

Digital transformation of TV newsmaking

Digital technologies have radically shaped practices in TV newsroom after 1990s. Text management systems such as BASYS first allowed reporters to write scripts on computers so that news editors could vet stories and arrange rundowns earlier. Such networked collaborative systems brought convenience for anchors and news production crews to prepare for news presenting and broadcasting. Since the mid-1990s, the second wave of digital innovation attempted to connect islands of technologies, like text systems, nonlinear editing workstations, and broadcasting servers, in order to easily produce timely news for multiple purposes (Scott, 1999). However, the initial transition was rugged due to system incompatibility and unreliability (Riser & Kast, 2001). When the early adopters implemented integrated newsroom technologies, journalists and news

crews often wrestled with the chaos caused by crashing servers and disappearing pictures (Rees, 2000).

In late 1990s, digital technologies which caused efficiency in modifying, duplicating, and repurposing news materials (Usher, 2003) became mature and cost-effective to meet demands for increasing speed and flexibility in TV news production (Aviles et al., 2004). A growing number of TV worldwide adopted integrated newsrooms to cope with producing and distributing content for multi-channels and multi-platforms. In Europe, YLE, the Finnish public service broadcaster, was the first to introduce integrated newsroom in 1996. International TV news organizations, like BBC and ITN, completed newsroom digitalization two years later. The digital wave hit America in 2001 when CNN, MSNBC, and Fox News implemented integrated newsrooms. A few years later, three US networks switched to tapeless news production. In Asia, the first integrated newsroom was set up at Hong Kong's Phoenix TV in 2001. China's CCTV, Korea's SBS and Taiwan's Formosa TV transitioned to digital news production in 2003.

As integrated newsroom technology can easily share, repurpose, and distribute content across platforms as well as exchange information conveniently and respond to quick changes (Abunu et al., 2003), an increasing number of TV stations across the globe use such technology nowadays. However, comparing with widespread diffusion of digital newsrooms and empirical reports, little scholarly research focuses on how the implementation shapes traditional journalistic practices, work, and the production process.

News production in integrated newsrooms

After adopting integrated newsrooms, Chou and Ju (2005) divided the digital TV newsmaking process into news covering (writing and shooting), editing, broadcasting, and archiving. They found using digital files and servers shifts tapes' linear production to a reciprocal and circular process. The practices in converged newsrooms reveal that the structure is more bottom-up, less hierarchical, or more closely resembling a network

organization than the traditional top-down organizational model (Verweij, 2009). This increases information exchange, decision making, and collaboration between reporters, editors, and news crews.

Figure 1 illustrates a generic digital production process. After gathering audiovisual material, reporters key leads and news scripts into the text/rundown system, while the footage is ingested/digitalized in high resolution and stored in central video/audio servers. The integrated newsroom system offers reporters and VJs the ability to browse footage and do rough editing on desktop computers. Later, the fine editing can be completed by using nonlinear editing systems. Line producers and news editors not only use the text system to vet scripts, write titles, revise leads, and arrange rundowns but also review videos in advance via central video/audio servers. During broadcasting, directors in the control room follow the sequence of rundowns to cue news clips' playout. The broadcast content, finished news videos, and ingested footage can be modified, duplicated, and transmitted over multiple platforms. News archives are stored in a video database for future production use. In general, TV news digitalization has advantages to allow multiple users to access digital footage and archives, reduce cost of tapes and storage, and offer compatibility with digital transformation (Chen, 2003).

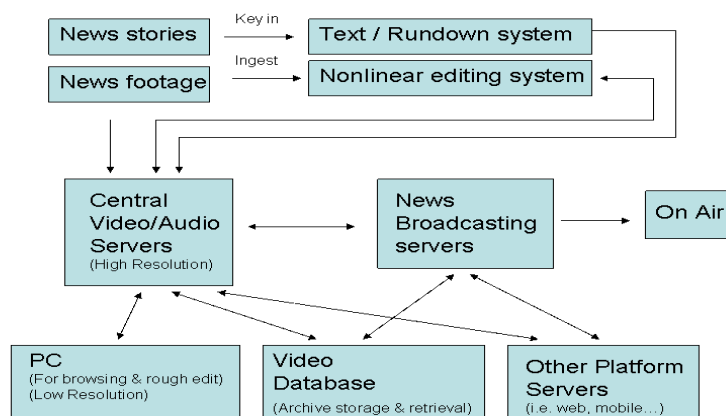


Figure 1. Digital News Production Process (Modified from Chou & Ju, 2005)

Outcomes of adopting integrated newsrooms

Although some argue that digital technology supplements the newsmaking process rather than make radical changes to it (Deuze, 2008), the adoption of integrated newsroom which involves large-scaled implementation causes more radical changes in TV news production (Lin & Davidson, 2007). Digital transformation from tapes to files requires adjustments in work and workflow regarding audiovisual content creation, broadcasting, archiving, and distribution (Aviles & Prieto, 2008; Lin, 2012). According to Cottle and Ashton (1999), changes in news practices and processes did not develop inherently from the technology but resulted from social choices associated with technological design and deployment and adjustments in corporate and professional contexts. Successful technological transformation was more related to the social and organizational structure of the newsroom (Verweij, 2009). Lin (2012) compared the implementation of integrated newsrooms in Taiwan and Singapore found two multi-channel TV stations shared a long negotiation process to make changes in optimizing workflows and news work to meet organizational needs. Prior studies showed TV news digitalization alters production, postproduction, and broadcasting practices (Yen, 2005), but seldom influences preproduction (i.e., news generation and news judgment) (Chou & Ju, 2005). Yen (2005) found tape-related news work was affected most by digitalization.

The introduction of digital computerized technologies has been seen by scholars as fragmenting work roles and deskilling workers. MacGregor (1997) even sarcastically described the computer-bound journalist as a “mouse monkey” who sacrifices journalistic performance to busily reprocess news into various packages for different programs or outlets. Multi-skilling emerged as a byproduct of multi-platform distribution and a 24-hour news cycle and raised questions about journalistic standards and editing procedures (Aviles & Prieto, 2008). According to Bromely (1997) and Ursell (2001), multi-skilling brought by new technology and multimedia news production has blurred the distinction between journalists and technicians and may compromise journalistic performance. Cottle and Ashton (1999) claimed that implementing the digital newsroom at BBC resulted in multi-skilling and multimedia production which increased journalists’

workloads and undermined news quality.

Nevertheless, most journalists in Aviles et al.'s study (2004) who overcame the challenges of nonlinear editing after training did not accept the view that multi-skilling reduced news quality. On one hand, journalists felt more computer-bound and pressured; on the other hand, they welcomed the increase in control over work processes and news outputs. Lin (2012) found multi-skilling in some work roles caused by workflow adjustments after adopting integrated newsroom received various responses from reporters and news workers. Although some quality of audiovisual production was sacrificed initially, overall multi-skilling was a solution to the challenges of adjusting news production to the new technological and organizational conditions. Additionally, multi-skilling requires news staff to strengthen quality control procedures so as to maintain professional journalistic standards (Aviles & Prieto, 2008).

The impacts of multi-skilling in TV newsmaking were associated with organizational cultures and structures and news market competitiveness (Lin, 2012). Temporal stress also plays a crucial part in adapting TV news professionals to multi-skilling (Lin & Davidson, 2007). Integrated newsroom implementation can bring positive effects on news production without deteriorating content quality if the changes solve existing organizational problems and the adjustments are put into effect gradually with reasonable training and expectation (Lin, 2012). For example, as the adoption of digital newsrooms improved an unsatisfactory analog workflow, news workers in Singapore were willing to embrace multitasking in the newsroom.

Methodology

As earlier studies showed that introducing digital technologies led to various consequences in TV news production, this study aims to examine three early adopters' cases on how implementing integrated newsrooms may bring different impacts on TV news practices, workflows, and production processes in various organizational contexts.

According to [Cottle \(2007\)](#), the ethnographic approach can reveal more about the

processes of embedding new technology into a social setting and their mutual shaping than other research methods, and can generate more insights into empirical studies of media production in complex organizational settings. Also, interviewing news content creators provides penetrating perspectives on journalistic practices and norms (Robinson, 2007). In addition to overt observation two weeks in each research site, this multiple case study conducted in-depth interviews with sixty-seven news workers (e.g., news managers, journalists, producers, news editor, production crews, and IT staff) in Taiwan's three TV stations which successfully adopted integrated newsrooms early.

Taiwan has a competitive TV news environment with seven TV channels broadcasting 24-hour news and eight TV stations broadcasting prime time news. As of November 2012, 80% of TV stations adopted integrated newsroom and transitioned to tapeless news production.² The three cases selected for this study were the few successful early adopters of integrated newsroom technology, including a national broadcaster (FTV), a 24/7 news channel (TVBS) and a non-profit satellite TV channel (DA-AI). They have distinct organizational characteristics vis-à-vis structure, size, culture, leadership, and innovativeness. The brief background of the three cases is as follows:

Formosa Television (FTV)

Established in 1997, FTV, a national broadcaster, has over 300 news employees to produce its terrestrial prime time news and a 24/7 Formosa Satellite News channel (FTVN). This station is keen on adopting new technologies and innovative news services. After the failure of nonlinear editing implementation in 1997, FTV took six years to re-embrace TV news digitalization. FTV was the first to adopt the integrated newsroom, Avid News Gathering System (ANGS), in Asia and its innovative IT department became the regional agent to provide ANGS setup and maintenance services.

² As there was no existing research or statistics about the latest development of digital integrated newsrooms in Taiwan, in November 2012 the researcher contacted all listed Taiwanese TV news stations including TV channels broadcasting news and 24/7 news channels. The result of asking about the implementation of digital newsroom technology was that 80% TV stations have adopted different news systems.

By July 2003, its newscasts were all broadcast digitally.

DA-AI TV

Launched in 1998, non-profit DA-AI TV station is funded by Tzu Chi, Asia's largest charity foundation. Ninety news workers produce DA-AI's prime time news and 500 global volunteers provide news clips. Due to budget constraints, DA-AI developed a cost-effective, pioneering newsroom by integrating MAC's nonlinear editing, ENPS text systems, and AEM broadcasting server. DA-AI's journalists are given laptops for script writing and video editing. Without using VTR as backup, DA-AI news set up a total tapeless production process in both news and programming and thus won a national TV R&D award. Its newscasts were all broadcast digitally by December 2004.

TVBS

Launched in 1993, TVBS is Taiwan's first satellite broadcasting channel. It has 400 news workers producing news for its Varieties Channel and a 24/7 TVBS-N channel. This leading news station which emphasizes ratings greatly has a conservative but competitive culture. To replace analog equipment, TVBS decided to adopt ANGS in mid 2005 and outsourced FTV's IT team for implementation. By March 2006 TVBS broadcast all newscasts digitally, but it postponed to using nonlinear editing until the completion of database setup.

This study endeavors to provide a rich understanding of integrated newsroom practices by comparing three early adopters when comparative research in media systems is suggested to be extended ([Blumler et al., 1992](#)). Usually, the difficulties of a comparative approach lay in researchers' superficial understanding of media, diverse cultures and contexts involved, and lack of rigorous methods for making meaningful comparisons ([Aviles et al., 2004](#)). As a former news reporter and producer, the researcher is familiar with journalistic practices and norms in Taiwan's TV news departments to ensure the methodological rigor in data collection and make meaningful inter-organizational comparisons. Using the thematic data analysis (Miles & Huberman,

1994), the researcher identified and coded recurrent themes from transcribed interview data in the ACCESS database. The observational data were used to triangulate interview results in order to avoid distortions caused by organizational politics and enrich contextualized information. These improved the reliability of case comparisons for insights regarding the impact of implementing integrated newsrooms on TV news practices and production.

Findings and Analyses

Technologies not only bring opportunities for extending old skills and creating new ones, but also shape news practices in a way that removes, erodes, or creates communicative and coordinative activities in the newsroom ([Christopher, 1997](#)). In-depth interviews and overt observation results in the study after implementing TV integrated newsrooms showed changes and adjustments in three aspects: digital workflow, news practices, and production process, as well as newsroom dynamics and work relationships. They also caused various implementation outcomes and user responses in the three early adopters.

Changes in digital workflow after adopting integrated newsrooms

To smoothen the transition and reduce user resistance, the news managers and steering committees in the three cases made great effort to narrow the gap between analog and digital news production by minimizing changes in work roles and news practices. Their goals were to reduce the disruption of daily news production and alleviate severe alterations in the newsmaking process, especially in the two commercial TV stations. For example, the major reason why FTV and TVBS selected ANGS was the compatibility with their legacy text systems so that reporters and line producers did not have to adjust their working habits of script writing, vetting news, and rundown arrangements. In general, the three cases which adopted integrated newsrooms shared similar digital workflows which include scripting, shooting, ingestion (i.e., footage

digitalization), nonlinear editing, broadcasting, cross-platform distribution, and archiving.

Generally speaking, the text-related workflow did not involve such drastic changes as the audiovisual-related workflow. The reporters in the two ANGS adopters kept the work routines of writing scripts on-site or on the move and later keyed them into the text system in headquarters. DA-AI's reporters who were equipped with a laptop with a wireless device could finish writing scripts and transmit them to the text system from a distance, creating temporal advantages and chances for scoops. "Digitalization does not change the essence of our reporters' work too much. I like the mobile equipment to save our time for keying in scripts and transmitting it back to the system" (W. Jwo, personal communication, May, 25, 2006). By doing so, DA-AI's line producers who arranged rundowns for newscasts could be aware of stories earlier and broadcast timely text-only news on air.

"Digital shooting" which replaces tape recording with hard disc storage requires an additional step called "ingestion" to digitize the raw footage and transfer it into the nonlinear editing workstations. The digitized footage in the integrated newsroom system allows multiple news workers to browse and edit simultaneously. The "editing" step which involves complexity in technical training and changes shows variations in the three cases. Video journalists (VJ) in FTV used the well-known nonlinear editing software to edit digital ingested and complete news clips in editing suites, while those in TVBS, in the intermediate transition, still edited videos through the VTR system and ingested final news clips for broadcasting in order not to slow down news production. Both TV news departments did not ask VJs to use low-resolution editing before final cuts in high-resolution as it complicated the production process and caused confusion in file naming and retrieval. Their VJs ought to edit news videos in professional editing bays instead of their desktop computers. In comparison, as DA-AI's VJs edited news clips on laptops and dispatched sizable news clips by fiber or high-speed broadband, their news work became less constrained by physical spaces than those in the other two stations.

DA-AI's digital workflow was the only one to turn mobile after using the integrated

newsroom system. Its Vice News Director Ou viewed such mobility as the guerrilla spirit benefiting timely TV news production. “By using portable computers and nonlinear editing, we can cover and produce news at news sites. It lowers cost and cuts down transportation time” (H. Ou, personal communication, May 22, 2006). The implementation of mobile office has allowed DA-AI to outpace big commercial TV news organizations and be the first to broadcast breaking news many times.

After editing, all completed news clips are stored in central servers for broadcasting on air. The playout operators follow the sequence of rundowns to click the list of videos on the computer screen instead of playing tapes. Real-time broadcasting is just one channel for news content distribution. The three stations have assigned staff to repurpose TV news for broadcasting news content on other TV channels (e.g., news in different languages) and disseminating over TV stations’ official websites and mobile news, called cross-platform distribution. Usually “archiving” is regarded as the last step when newsworthy footage after selection and deletion are stored in an offline digital library or a near-line HD database. Overall, the digital workflow becomes more flexible in sharing footage, duplication, content alteration and repurposing, and multi-screen distribution.

In the cases studied, some analog news practices were altered after implementing the integrated newsrooms in order to optimize news performance and increase user acceptance. TVBS’s multimedia and IT manager stressed the significance of workflow customization to meet organizational needs: “Although TV stations adopt the same systems, their workflows will be adjusted differently due to various news routines and work habits” (S. Chen, personal communication, July 9, 2006). Another critical principle for designing the digital workflow was that workloads should be allocated reasonably so as not to overwhelm some news professionals. The shaping of digital workflows was found to be context-sensitive and affected by the technology used, previous news routines, the organization’s needs, and user responses.

Changes in news practice and news production process

After analyzing the interview and observational data from the three cases, this study found that implementing integrated newsrooms caused almost no change in preproduction processes, such as news idea generation and news judgment. Just a few alterations were involved in the text production process. After adoption, reporters in the two ANGS adopters continued to write their scripts while editors vetted scripts and arranged rundowns in the same way. The only new component added for digital text production was the handling system which created news file IDs for users to identify the right clips from myriad, frequently updated news files. However, DA-AI's reporters who were equipped with a laptop had more time to search for relevant online information before arriving at news sites and wrote news scripts on the way back to headquarters.

In contrast, this study's data showed dramatic changes in news practices related to audiovisual production process (i.e., digital filming, nonlinear editing and digital broadcasting), digital archiving, and cross-platform distribution. After digital shooting, it involves an "ingestion" process to store and transcode footage from digital tapes, hard disks, or Blu-ray discs to nonlinear editing workstations. FTV used digital tapes for recording videos which consumed longer time for ingestion while TVBS adopted digital cameras with Blu-ray storage and DA-AI had mini-DVCams with CitiDISC HD in order to speed up digitalization and reduce the temporal stress from news production.

The ingested footage in the networked database allowed multiple users in different news teams and physical places in headquarters to access, browse, edit, and review the videos. The interviews and observations show that the integrated newsroom allowed the ingested footage to be shared by several users simultaneously and eliminated tape duplication for content repurposing or multi-platform redistribution. Reporters could browse raw footage or archival news to write to the pictures; VJs edited news and uploaded video clips to the servers; line producers and news supervisors were able to keep track of news clips in progress, vet news content in advance, and arrange newsworthy rundowns. According to line producers and news supervisors in three stations (Y. Jang, personal communication, May 23, 2006; H. Hong, personal communication, June 21, 2006), using integrated newsroom's multiple video-viewing

function improved their news quality control by giving timely feedback and preventing errors as well as arranged newsworthy rundowns.

Although implementing integrated newsroom did not cut manpower in the three cases, some work roles were adjusted or added to optimize workflow and news practices. In terms of news production process, these VJs experienced the most radical changes and showed higher resistance to ingestion as they complained this new step slowed down editing speed and increased deadline pressure. According to a TVBS VJ veteran who was used to VTR editing for many years, “Ingestion is not suitable for TV news, especially when our news updates more frequently than other TV stations’ news. Such a step wastes our time” (F. Yang, personal communication, July 7, 2006).

Unlike other countries, Taiwan’s TV reporters did not become multiskilled after transitioning to an integrated newsroom as their job scope did not include editing. Even after training in nonlinear editing, the majority of reporters who considered editing as VJ’s work could not cut their narrations due to unfamiliarity (S. Chang, personal communication, June 5, 2006). Nonetheless, some reporters started to record voice-overs, edit sound bites, and became involved in picture selection (C. Jue, personal communication, June 29, 2006; W. Jwo, personal communication, May 25, 2006). Such participation strengthened their ownership of the news work and enhanced content quality. Besides, many novice users of nonlinear editing were fascinated by the ease of doing special transitional effects. Later when they reduced fanciful effects and used necessary and newsy ones, news video quality increased.

Although system crashes occurred at the initial stage of implementing integrated newsrooms, the digital broadcast process was found to be more responsive to contingent and constant changes to fulfill the immediate needs of live newscasts. Line producers in the three cases agreed that using the digital broadcasting system shortened the reaction time for changing rundown sequences and content during live broadcasting. “When I insert timely stories or adjust the news order, what I need to do is to switch the rundown sequence and click the file on the computer screen. Unlike the previous analog production, there is no tape to be ejected and replaced into VTR players,” said Y. Jang, a

DA-AI line producer (personal communication, May 23, 2006). However, line producers in DA-AI faced even more challenges in using the advanced system to do multiple tasks, including organizing rundowns, linking text with news clips (i.e., lead, titles and news stories), and composing visual designs behind anchors. They complained that the new work overwhelmed them as it increased stress, deadline pressure, and the probability of errors (Y. Jang, personal communication, May 23, 2006; H. Jeng, personal communication, May 24, 2006).

Among the three cases, DA-AI's digital broadcasting is the most unstable. Unlike other two ANGS digital broadcasting, DA-AI's IT-centered control room saved half of manpower and required only five news workers for digital broadcasting. Preproduction plans and communication became extremely critical in its digital broadcasting process as the equipment gave the directors less flexibility in changing complicated visual designs on the air. With no tape backup, frequent system crashes initially caused crises and chaos and deepened user distrust. With the IT staff's support, studio crews were required to troubleshoot problems quickly during broadcasting.

Setting up the digital database can speed up reporters' and VJs' search for pertinent newly ingested or archival footage for editing and enhance video quality. DA-AI has digitalized and stored a large offline archive and accomplished tapeless news production. Its staff first used desktops to search for low resolution footage via the intranet, filled in request forms, and brought portable hard disks to save footage. However, many reporters and VJs felt dissatisfied with DA-AI's less user-friendly system, imprecise search results and the troublesome procedure (W. Jwo, personal communication, May 25, 2006; C. Shieh, personal communication, May 29, 2006). As a result, VJs at DA-AI created personal video data folders in their laptops and exchanged footage with peers. Besides, FTV set up its digital archives partially and TVBS postponed the use of nonlinear editing after establishing the database. During the research period, news workers at the two stations have not fully experienced the benefits of digital database in news production yet.

Changes in newsroom dynamics

News production which transmitted digital texts and video files via intranet and servers reduced the opportunities of face-to-face communication and physical transfer of tapes and documents. News professionals produced news videos, teasers, and special effects via the integrated newsroom technology simultaneously. When exchanging information, they usually sent messages for news routines via the text systems but made voice calls for time-sensitive or complex matters. For the two multichannel news stations (TVBS and FTV), their news teams could produce different newscasts at the same time without fighting for tapes because multiple users could browse ingested footage, edit news clips, retrieve finished videos, and arrange rundowns by using the integrated newsroom technology. These benefited the multichannel news production greatly and received synergistic effects from flexible manpower arrangements.

Based on interviews and observations, when digital production ran smoothly, the newsroom atmosphere at peak times appeared less noisy and chaotic than it was before digital conversion. Digital production eased the previous tension and pressure when people had to chase tapes and deliver them to control rooms with only minutes to spare. FTV's deputy news manager thought digitalization reduced clashes especially during broadcasting. "Previously, if news tapes couldn't be completed and sent to the sub before the anticipated broadcasting time, it tended to cause conflicts between line producers and VJs. Now the conflicts are apparently reduced" (P. Tsai, personal communication, May 6, 2006). He considered reducing aggravation associated with chasing tapes as one main reason to embrace server production.

However, the three stations suffered when the nonlinear editing and broadcasting systems broke down when their newscasts were broadcasting or would broadcast soon. These crashes happened frequently at the initial implementation stage and jeopardized newsroom operations. When the FTV and TVBS integrated newsrooms broke down, the news production immediately switched back to tapes and VTRs, but the changes usually caused considerable tension and panic (P. Tsai, personal communication, May 6, 2006; R. Yang, personal communication, June 27, 2006). In contrast, DA-AI's news teams, without tapes as backup, experienced tremendous pressure during system malfunctions

compared to the other two stations. The anchors were forced to keep reading news scripts without videos during broadcasting. A DA-AI news manager, also a veteran anchorwoman, complained that the unreliable digital system undermined her professional performance and news quality. "I am a victim of the digital chaos. Sometimes when I presented news and the system unfortunately broke down, I could only keep reading news stories without videos or visual aids and had to finish the newscasts earlier than scheduled." (S. Yeh, personal communication, May 25, 2006).

News system instability created moments of chaos which led to user distrust and resistance. "Virtual" files and digital news transmission, coming on top of the complex integrated newsroom systems, initially made TV news production uncertain and less reliable. When important news clips got lost during transmission and could not be played in time, it caused clashes between VJs, line producers, and studio production crews. While they were trying to figure out the causes of the "virtual" problems, there were difficulties in diagnosing and clarifying the responsibilities.

The interviews and observations revealed that newsroom dynamics were shaped by changes in news practices after using integrated newsrooms. The digital workflows and news practices required some alterations in collaboration among news workers (C. Shieh, personal communication May 29, 2006; J. Tsai, personal communication, May 26, 2006). Although the quality of the newscasts was compromised during the initial implementation by the volatile system that made it hard to consistently deliver high quality news content to the audience, the situation improved after troubleshooting and adjustments in technology and news workflow.

Finally, based on the findings and analyses, Figure 2 summarizes the generic digital workflow, news practices, and production process after adopting integrated newsrooms, which can be applied to other TV stations' future adoption. It clearly states how news professionals (i.e., reporters, line producers, video journalists, video editors, directors, and production crews) function in the digital workflow by using production technologies (e.g., editing workstation, central audiovisual server, and video database) among various production processes (i.e., scripting, digital shooting, ingestion, nonlinear editing, digital

broadcasting, digital archiving, and cross-platform distribution). The practices that remain the same as the tape production are related to using the text/rundown system, including reporters' scripting and line producers' vetting of the news and arranging rundowns. The rest are new crucial steps in digital news production which involve altered work roles and journalistic practices as discussed previously.

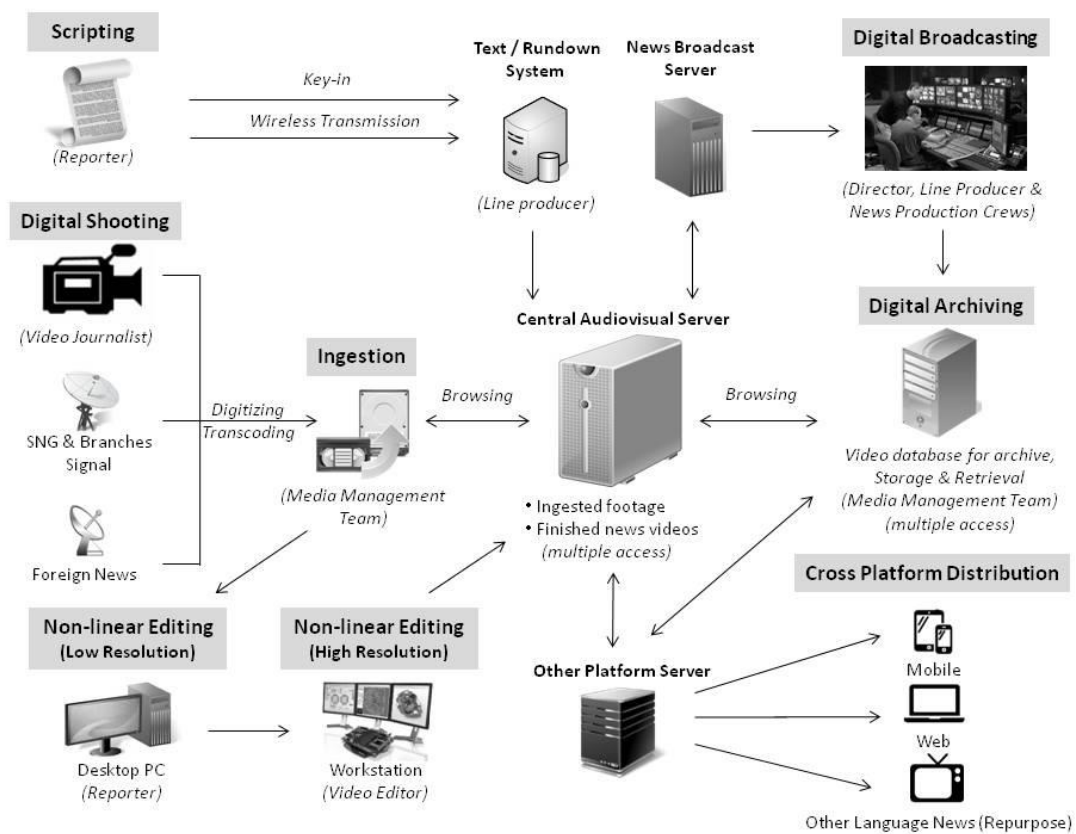


Figure 2. Digital workflow and production process of TV news after adopting integrated newsroom

Discussions

Although almost all managers, like DA-AI's Vice Director Y. X. Yu (personal communication, May 24, 2006), recalled the long, painful and challenging transition

after implementing integrated newsrooms, the majority mentioned competitive advantages brought about by the adoption. The Vice Director of FTV news (G. Wu, personal communication, June 5, 2006) found implementing ANGS brought tremendous convenience to TV news production: “As digital text and audiovisual files can be browsed, edited and vetted simultaneously by multiple users, news production after ingestion has become more efficient. A new workflow is produced which doesn’t require complicated collaboration from multiple parties and doesn't require copy tapes anymore.” Other news supervisors emphasized advantages of integrated newsrooms that included increased speed in newsmaking (Y. Su, personal communication, May 6, 2006); convenience in sharing audiovisual resources (P. Tsai, personal communication, May 6, 2006); ease of content repurposing and redistribution (J. Tsui, personal communication, May 30, 2006); and savings in time and storage (M. Huang, personal communication, July 7, 2006). Regarding the integrated newsroom as a useful tool for digital production, most TV professionals in the three cases believed that the fundamentals of news newsworthiness and professional journalistic norms would not be shaken by technological advancements, just as Hu, the FTV news manager and a broadcast journalism veteran, stated: “the ability of using technology is secondary to producing high quality news content and maintaining professionalism” (A. Hu, personal communication, June 5, 2006).

Challenges of multi-skilling

The implementation of integrated newsroom technology has led to concerns over the effects of multi-skilling. After digitalization, some news work is streamlined and news workers can multitask by using digital equipment. “The biggest advantage of an integrated newsroom is the simplification of work. Using the powerful system can produce desirable results that used to be achieved by many people and various sources,” said J. Ho, DA-AI’s manager in IT and Technology department (personal communication, June 22, 2006). Multi-skilling did not cause manpower downsizing in

the three cases, echoing the findings in Spain's TV stations ([Aviles and Leon, 2002](#)). Critics have argued that multi-skilling blurs the distinction between journalists and technicians ([Bromley, 1997](#); [Ursell, 2001](#)), increases the workload of TV journalists, and undermines the quality of TV news practices, resulting in shallow scripts and banal news sources ([Cottle and Ashton, 1999](#); [Aviles et al., 2004](#)). However, as the three Taiwanese TV stations adjusted their digital workflow, work roles, and news practices to prevent negative outcomes after implementing integrated newsrooms, there was no finding suggesting that multi-skilling caused changes in news quality except for the effects of initial system unreliability.

Unlike prior findings in Western newsrooms, this study found most of Taiwan's TV reporters were not required to do nonlinear editing after their stations adopted integrated newsroom technology. However, some took up multi-skilling voluntarily to record voice-overs, edit sound bites, and select videos (C. Jue, personal communication, June 29, 2006; W. Jwo, personal communication, May 25, 2006). They did not perceive such multi-skilling as extra work which reduced news quality or complain about eradicating the boundaries between established production roles. On the contrary, understanding visual grammars allowed them to write to the picture and improve news presentation. Realizing the global trend of backpack journalism, they were open to learning technical skills in shooting and editing which were formerly regarded as peripheral to core journalistic practices. They considered these as on-job learning which increased their competence to cope with future professional challenges.

After reporters were trained to use nonlinear editing, the traditional job distinction between reporters who worked for text and VJs who were in charge of videos was blurred. The collaborative relationship between reporters and VJs in video editing became flexible (J. Ho, personal communication, May 22, 2006). In the three cases, reporters could handle video work to various degrees depending on training, work requirements, and attitudes toward multi-skilling. The majority of reporters in FTV and TVBS still focused on developing news synopsis, communicating with interviewees, writing scripts, and recording narrations (S. Chang, personal communication, June 22,

2006). However, DA-AI's reporters used their laptops to cut interviewees' sound bites, selecting pictures and recording voice-overs in addition to old routines. Instead of complaining about increased workload after digitalization, they thought participating in editing not only gave them a sense of achievement and ownership in news production but also improved overall news quality (N. Sheng, personal communication, 29 May, 2006; W. Jwo, personal communication, May 25, 2006). Most VJs like C. Shieh (personal communication, May 29, 2006) welcomed close cooperation with reporters who could take care of some "technical" work, especially when they changed news practices greatly. The overall findings showed both sides felt such cooperation resulted good quality news by seamlessly weaving scripts and visual presentations together.

For VJs, it was necessary to alter their old work habits to fit into the digital workflow. "Initially, colleagues surely experienced stress when using new equipment, especially VJs." said H. Ou, DA-AI's Vice News Director (personal communication, May 22, 2006). Learning nonlinear editing skills shifted them from tape to digital news production and secured their jobs. Despite complaints about ingestion, most of the VJs interviewed in the three stations praised the convenience of nonlinear editing, including its flexibility in content modification and in visual presentation enhancement (C. Liang, personal communication, June 29, 2006). Senior staff usually found it difficult to adjust to digital shooting and computer editing. Comparatively, DA-AI's VJs became more multiskilled than others as they not only mastered nonlinear editing but also learned new skills such as recording narrations and editing videos on location and transmitting files back to headquarters (C. Shieh, personal communication, May 29, 2006). As they understood the advantages of having mobile production tools to improve news immediacy, none showed negative responses to multi-skilling changes.

Although news practices of line producers in FTV and TVBS remained almost unchanged after digitalization, the workload at DA-AI increased drastically. DA-AI's advanced text/rundown systems which could control text and videos during broadcasting swamped line producers with various tasks, according to the deputy news manager, W. Shi (personal communication, May 22, 2006). The observations in the newsroom and

control room found that these line producers were overwhelmed with chasing down unfinished news, linking texts with videos, adjusting rundowns for last-minute changes, and arranging visual layouts. “Without the assistance of other line producers, I cannot cope with my work during primetime live broadcasting as I am too busy to handle visual layouts in addition to texts and content as I used to,” said DA-AI’s producer (Y. Jang, personal communication, May 23 2006). Such heavy workload unfortunately resulted in DA-AI’s line producers’ high dependency on colleagues’ support and distraction from news adjustments in texts and rundowns to other tasks, making digital broadcasting the weak link in news production.

Multi-skilling in the three cases was the byproduct of optimizing the digital workflows. Despite some resistance to new changes in digital workflow and news practices, most news managers and workers interviewed in the three cases did not think that implementing integrated newsroom technology and multi-skilling lowered news quality but stressed the positive outcomes in news production and distribution.

Organizational adoption process of integrated TV newsrooms

Organizational characteristics are crucial to influence the adoption process of integrated TV newsroom and its outcomes (Lin, 2009; Lin, 2012; Lin & Davidson, 2007). Commercial TV stations (FTV and TVBS) decided to adopt a professional newsroom technology (i.e., ANGS) as they emphasized safe broadcasting to maintain TV ratings. However, DA-AI, a non-profit TV channel without huge pressure of TV ratings and big budget, takes an innovative way to develop its own IT-centric, award-winning newsroom system. As DA-AI has only one TV channel to broadcast several daily newscasts, it does not face as much temporal stress in news production compared with the other two cases with multichannel and 24/7 news.

Compared with FTV and TVBS, DA-AI went through radical changes in establishing a self-developed system and adjusting the workflow required for its reporters, VJs, and line producers to learn new skills and become multi-skilled. According to DA-AI’s producer-director, S. Pan (personal communication, May 23,

2006), “DA-AI has an innovative organizational culture that is willing to try an experimental system partly because it is not a highly competitive commercial TV station, which allows for trial and error and forgives mistakes.” Notably, DA-AI’s tolerant organizational culture gave its news professionals more support to be innovative and receptive to technological and work changes and thus the responses from its news workers were mostly optimistic. For example, experienced news workers who were accustomed to analog ways of newsmaking tended to appear less receptive to digital changes in FTV and TVBS. Nonetheless, most of DA-AI’s senior VJs felt proud of their new production tools which increase mobility and efficiency and resisted less than their counterparts in the other two cases. As result of these organizational characteristics, DA-AI’s news professionals accepted changes in work and news practices such as multi-skilling more positively than those in FTV and TVBS who faced strict organizational cultures, strong news competition, and constant deadline pressure.

The findings showed the three early adopters had similar organizational adoption phases after implementing integrated newsrooms (Lin, 2009). The first phase was to lay fundamentals, including technological establishment, developing a digital workflow, and conducting training for new journalistic practices and production routines. The second phase continued with technical troubleshooting and work adjustments which converted some work roles to multi-skilling in order to achieve a smooth transition and optimal newsmaking. With this gradual implementation strategy, news professionals experienced advantages of using integrated newsrooms (e.g., increased efficiency, increased productivity and workload changes). After re-adjustment and restructure, the systems gained stability, the news departments developed SOPs, and digital practices became routine in the third and final phase. Both FTV - which first adopted professional ANGS in Taiwan - and DA-AI - which implemented an IT-centric, home-grown system - spent a long time in the first two phases and reached the final phase after a few years. TVBS, which used FTV’s IT to implement the ANGS and design its customized workflow, speeded up the digital transition but did not reach the third phase within the period of data collection. Figure 3 shows the generic organizational adoption processes of

integrated newsrooms indicating organizational factors affecting implementation (e.g., commercial vs. non-profit, temporal stress, innovativeness, and organizational culture).

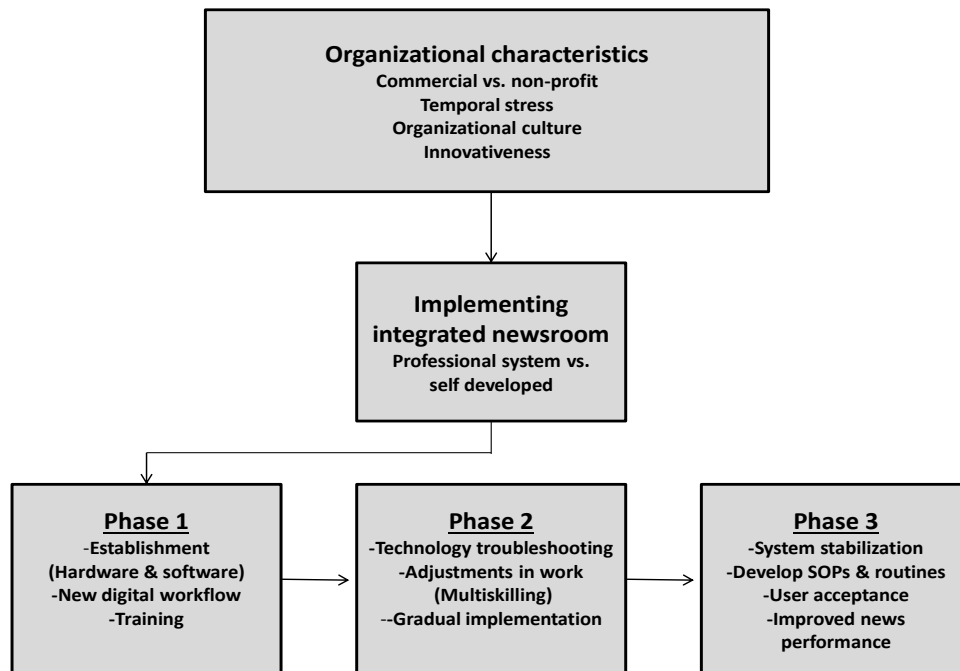


Figure 3: Organizational adoption process of integrated TV newsrooms

Conclusion

This multiple case study on the impact of adopting integrated newsrooms among early adopters highlighted workflow changes, challenges to news production, and complexities of digital news practices. Unlike previous studies which focused only on journalistic and editorial practices, this study expanded the scope of investigation to the entire news production process and investigated influences of digital news production on the whole news departments. The findings demonstrate how digital workflows, work alterations, and newsroom collaboration are socially and culturally affected by organizational contexts such as competition pressure and organizational culture. Digital news workflow is shifted from a linear process to a parallel and reciprocal one after

digitizing footage and increases new steps like ingesting, nonlinear editing, and multiplatform distribution. Digital transformation leads to changes in some job scopes which requires news workers like VJs (three stations), reporters (three stations), line producers (DA-AI), and directors (DA-AI) to learn new skills.

Cottle and Ashton (1999, p. 26) stressed that a larger body of empirical studies is necessary to improve knowledge of the complicated interactions between changing news technologies and journalistic practices. This multiple case study of early adopters of integrated newsroom technologies provides rich insights into digital TV news workflow and production as well as deepens the understanding of complexities of fast-changing journalistic practices. The empirical findings provide insight for news managerial planning to anticipate technological, organizational, and work shifts caused by implementing integrated newsrooms in order to strategize a smooth digital transformation and maintain high quality newsmaking. Consequently, the knowledge of the present study can be used to facilitate other TV stations' adoption of integrated newsrooms or similar complex news production technologies which involves large-scaled adjustments in news organizations. As for limitations, although some might point out that the interview and observation data were collected several years ago, the findings reflected the three early adopters' historical transformation and adjustments to the challenging technological and organizational changes after adopting the important digital newsrooms in organizational contexts.

References

- Abunu, D., Good, J., Haughton-Brown, C., & Lewis, R. (2003, September). The BBC in the digital age: Defining a corporation-wide systems architecture. Paper presented at the 2003 International Broadcasting Convention, Amsterdam, Netherlands.
- Aviles, J. A. G., & Leon, B. (2002). Journalistic practice in digital television newsrooms: The case of Spain's Tele 5 and Antena 3, *Journalism*, 3(3), 355-371.
- Aviles, J. A. G., Leon, B., Sanders, K., & Harrison, J. (2004). Journalists at digital television newsrooms in Britain and Spain: Workflow and multi-skilling in a competitive environment. *Journalism Studies*, 5(1), 87-100.
- Aviles, J. A. G., & Prieto, M. C. (2008). Integrated and cross-media newsroom convergence. *Convergence*, 14(2), pp. 223-241.
- Bromley, M. (1997). The end of journalism? Changes in workplace practices in the press and broadcasting in the 1990s. In Michael Bromely & Tom O'Malley (Eds.), *A journalism reader* (pp. 330-350). London: Routledge.
- Blumler, J. G., McLeod, J., & Rosengren, K. E. (Eds.). (1992). Comparatively speaking, communication and culture across space and time. California: Sage Publications.
- Chang, Z. Z. (2004). Exploring the impact of digital technologies on TV news workers and work: A case study of eastern TV (Unpublished master's thesis). Taiwan Normal University, Taiwan.
- Chen, H. Z. (2003). The relationship of Taiwan's cable TV news digitalization process and expected effect: A case study of Eastern TV (Unpublished master's thesis). National Central University, Taiwan.
- Chou, T. W., & Ju, C. B. (2005). The influence of digitalization on Taiwan's broadcast TV news. *Taiwan Journal of Arts*, 76(1), 51-69.
- Christopher, L. C. (1997). Journalistic skills in the digitalized newsroom. Paper presented at the Annual Meeting of the International Communication Association, Quebec, Canada.

- Cottle, S., & Ashton, M. (1999). From BBC newsroom to BBC newscentre: On changing technology and journalist practices. *Convergence*, 5(3), 22-43.
- Cottle, S. (2007). Ethnography and news production: New(s) developments in the field. *Sociology Compass*, 1(1), 1-16.
- Ke, C. (2006). Three models of TV news digitalization in Taiwan: A study of Formosa TV, ERA News and Da-Ai Television (Unpublished master's thesis). Shin Hsin University, Taiwan.
- Lin, T. T. C. (2008). Organizational adoption of core production ICT: transition to digital TV newsroom in Singapore. Paper presented at the 2008 International Association of Media and Communication Research Conference, Stockholm, Sweden.
- Lin, T. T. C. (2009). Implementing Digital Television Newsrooms: Strategies, Mediation Activities, and Innovation Responses. Paper presented at the Annual Conference of the International Communication Association, Chicago, USA.
- Lin, T. T. C. (2012). Multi-skilling as a solution? Changing workflow and journalistic practice and the implications for international news. In Judith Clarke & Michael Bromley (Eds.), *International news in the digital age: East-West perceptions of a new world order* (pp. 90-109), New York: Routledge.
- Lin, T. C., & Davidson, E. (2007). Mediating organizational innovation: A study of implementation of digital technologies in TV News. In *Proceedings of HICSS (40th Hawaii International Conference in System Sciences)*. Los Alamitos: IEEE Computer Society.
- MacGregor, B. (1997). *Live, direct and biased? Making television news in the satellite age*. London: Arnold.
- Miles, M. B., & Huberman, A. M. (2005). *An expanded sourcebook: Qualitative data analysis* (2nd ed.). California: Sage Publications.
- Pavlik, J. (1999). New media and news: Implications for the future of journalism. *New Media and Society*, 1(3), 54-59.
- Powell, P. (1998). New direction for the integrated newsroom. *TVB Europe*, 7(9), 1.

- Pettit, T., Donohue, R., & De Cieri, H. (2004). Career stage, organizational commitment and organizational citizenship behavior. Monash University, Department of Management Working Paper Series. Fremantle, Western Australia. Retrieved from <http://www.buseco.monash.edu.au/mgt/research/working-papers/2004/wp58-04.pdf>
- Rees, K. (2000). Newsroom technology. *International Broadcast Engineer*, 31(1), 35.
- Riser, J., & Kast, P. (2001). Design for the newsroom of tomorrow. *Broadcast Engineering*, 43(9), 70-75.
- Robinson, S. (2007). Someone's gotta be in control here: The institutionalization of online news and the creation of a shared journalistic authority. *Journalism Practice*, 1(3), 305-321.
- Scott, A. (1999). News in transition. *World Broadcast News*, 22(10), Business.
- Scott, S. G., & Bruce, R. A. (1994). Determinants of innovative behavior: A path model of individual innovation in the workplace. *The Academy of Management Journal*, 37(3), 580-607.
- Stepp, C. S. (1997). Can this relationship be saved? *American Journalism Review*, 19(3), 32-36.
- Super, D. E. (1957). *The psychology of careers: an introduction to vocational development*. New York: Harper & Row.
- Shipman, J. M. Jr. (1986). Computerization and job satisfaction in the newsroom: Four factors to consider. *Newspaper Research Journal*, 8(1), 69-78.
- Ursell, Gillian D. M. (2001). Dumbing down or shaping up? New technologies, new media, new journalism. *Journalism*, 2(2), 175-196.
- Usher, K. (2003). *Beyond the digital newsroom*. Paper presented at the 2003 International Broadcasting Convention, Amsterdam, Netherlands.
- Verweij, P. (2009). Making convergence work in the newsroom: A case study of convergence of print, radio, television and online newsrooms at the African Media Matrix in South Africa during the National Arts Festival. *Convergence*, 15(1), 75-87.
- Williams, R., & Edge, D. (1996). The social shaping of technology. *Research Policy*, 25, 856-899.

Yen, Y. M. (2005). Yesterday and developing days of electronic journalism production: Technologic production comparison of traditional electronic analog and digitalization in television journalism industry (Unpublished master's thesis). Chinese Culture University, Taiwan.

整合電視新聞室實務及工作流程改革： 早期採用者之多重個案分析

摘要

此多個案研究針對台灣早期採用整合新聞室(integrated newsroom)三家電視台, 深度訪談 TVBS、東森及大愛電視台共 67 位新聞從業人員, 並就新聞室動態和實務互動進行觀察比較。研究結果顯示: 實施整合新聞室後, 數位新聞流程增加重要步驟, 包括影像攝取(ingestion)、非線性剪輯和跨平台傳播, 並在拍攝剪輯和後製流程操作上有不少修改, 與傳統影帶相關職務(如攝影記者)的工作內容有大幅度調整, 而數位化後, 文字和攝影記者在影片剪輯的合作更加密切。此外, 大部分受訪者認為因改善數位流程造成多技能(multi-skilling)的工作需求, 但未導致新聞內容品質降低。雖然初期系統建置讓新聞室數位整合經歷陣痛, 但排除實施困難後, 電視新聞製播衝突大為減少。最後, 本論文就新聞台特質及其對實施整合新聞室之影響有進一步討論。

關鍵字: 整合新聞室 電視數位化 數位新聞 工作流程 新聞產製 多技能