THE AMERICAN NEWSROOM IN THE NEW ERA: FACTORS THAT INFLUENCE THE ADOPTION OR REJECTION OF NEW TECHNOLOGIES BY NON-MANAGEMENT NEWSPAPER NEWS PRODUCERS

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The undersigned, appointed by the dean of the Graduate School, have examined the thesis entitled

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a candidate for the degree of or master of arts in Journalism,

and hereby certify that, in their opinion, it is worthy of acceptance.

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Technology and journalism have been my greatest passions throughout my entire time in graduate school. I have had the chance to explore both, separately and coming together. It has been my greatest wish to bring my contribution to enhancing the two by providing academia with a research that would better explain the connection between the world of media and the world of technology. I have the strong conviction that understanding the way the two function and how they can best work together would bring about tremendous improvement on both sides, in a world where the media desperately needs to get better acquainted with technology and technology needs to serve the media.

My infinite gratitude goes to Dr. Clyde Bentley, who has inspired me to pursue on this research and who has spent his years in academia bringing innovation closer to journalism students. I will be forever grateful to a man who opened my eyes about the future of the media with every conversation we had, who supported and encouraged me to think outside the realm of journalism in an age where media professionals need to be more and more aware of everything that happens outside their field.

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Chapter 1. Introduction

Journalism has advanced with both the world and its technological progress. From paintings on cavern walls, to the first live television program using holograms, media professionals have not only reported on the new, but also experimented with it and struggled to integrate it in their daily work flow. Today, sophisticated technology is no longer something journalists only write about, but the actual mean for reporting and distributing information in an age that bursts with digital innovation.

More so, journalists need to engage in the most advanced technological methods of reaching their audience more efficiently as media professionals now battle a fast spread of unverified news. Journalists need to be quicker, but also retain the high level of accuracy that distinguishes the media from other sources of information. A very good example of the importance of the media needing to be faster and more accurate than ever, especially in the online environment, is the bombardment with false news on Facebook and Google during the 2016 U.S. elections.

The purpose of my thesis is to explore what influences the adoption or resistance to new technology in newsrooms and how new technologies change the journalistic processes. I will look at how non-management news producers dealt with technology throughout time, referring to the previous adoption of now embraced technologies. I will also inquire about technologies that they are currently experimenting with, and attempt to predict the probability of them using other new technologies that they might not be familiar with.

Research question: What newsroom cultural reasons do non-management newspaper news producers perceive as influencing the adoption or rejection of new
technologies by their newsroom?

The research method that I will use is qualitative semi-structured interviews with 11 news producers from newspapers across the United States, who will talk about their perception on how their newsrooms deal with technology-related decisions.

I chose a qualitative research method as it suited my time frame and skills, as well as the type of analysis needed to understand behavior. My research is structured around the Theory of Reasoned Action and the Technology Acceptance Model.

My goal is to understand newsrooms’ attitudes and actions when it comes to technology, and list potential explanations as to why media professionals tend to be more open towards embracing new tools or reject them at a specific moment in time, in a specific context.
Chapter 2. Literature Review

2.1. The concept of news and news producer

According to Stephens (2007), journalism, as we know it, relies on providing audiences with new information about topics that interest the public and that reach a specific percentage of the audience. Park (1940) noted news is as old as humankind, maybe older. Scanlan (2000) on the other hand identified news with a laborious process. In order to do news, one needs news judgment, that is being able to tell what exactly is news, how it should reach an audience, and whether or not it is valuable for them. Stephens (2007) also suggested that, when news is absent, anxiety prevails, as people cannot foresee what happens in their society.

Scanlan (2000) wrote that news meant different things at different stages in people’s existence. For instance, in the 1830s, information was only provided to the wealthy. Ever since the New York Sun was first published in 1833 at the cost of one penny, news started targeting the working class.

Through the ages, we’ve used various systems to send messages like smoke signals, semaphores (flags), pigeons, and human messengers, each of which had its own advantages and disadvantages. Each system worked when the conditions were just right, but was limited at least some of the time. For instance, smoke signals and semaphore systems did not work at night because they depended on sunlight for the receiver to see the signal. Messengers were slow and could be captured during times of conflict or war. Pigeons could carry very small messages but were susceptible to natural predators and severe weather (Medoff & Kaye, 2011, pp. 1-2)

As Stephens (2007) explained, different societies have developed different methods of gathering and spreading news at different times. Also, there have been many ways of bringing news closer to people. While today’s perception is that society
is invaded with information thanks to the spread of media outlets, networks, and the World Wide Web, people have tended to believe information was rampant at different stages in history, regardless of the available means. Today, a “hunger for news can be found in both the least and the most technological of societies” (p. 8).

According to the concept of mass communication, making use of media technology surged as early as the introduction of the printing press in the 1400s. Actually, in the United States, the two major events children are taught in school as having happened in the 15th century are the discovery of America by Columbus himself, and the invention or adaptation of Gutenberg’s letter press (Medoff & Kaye, 2011; Stephens, 2007).

Stephens (2007) noted that, back in the 18th century, the oral way of transmitting information was fading, and writing and print started replacing the coffeehouse exchange of information.

2.2. News, technology, and innovation

Scanlan (2000) reminded that, if in the early 70s, all reporters needed were a pen, a notebook, and a typewriter, in the 21st century, they needed a series of multiple other electronic devices. Journalists used emails to communicate with people and story sources around the world; they engaged in complicated statistics by using only spreadsheet software that took care of the hardest part of this mathematical task; they could also access public data without having to pay large sums for them, analyze it and come up with more story ideas; and more importantly they had the web and all its multimedia tools at their disposal to create stories using not only text, but also sound and video and other interactive elements.
Schreiber and Zimmermann (2014) also mentioned that journalism, as an industry, and technology, as a mean, have been in close connection since older times. News became a global object, rapidly distributed from one part of the world to another, thanks to past innovations such as telegraphy and the rotation press. Photography gave new meaning to text articles, as well as paved the way for new layouts and new journalistic types of work.

As Medoff and Kaye (2011) explained, electronic media started with radio. One century ago, Guglielmo Marconi came up with radio telegraphy, in order to send a signal from one point to the other. As soon as radio took off, scientists engaged human voice and music. Soon, radio became popular and was heavily promoted by both media and the education system.

According to Valero Pastor (2015), the communication market is constantly changing, and the media itself needs to embrace technology in order to stay relevant in today’s world. It does so by using new technologies and tools, by understanding changes in their audience habit and the current economic situation.

As storytelling evolves on the Web, media and technology industries are overlapping more than ever before. People from each field are learning more about what there is to know and adapt to by working together within organizations and networking at events, hackathons and workshops (Truong, 2015).

Schreiber and Zimmerman (2014) explained that, what needs to be considered is that there is a causal tie between a technology and its effects on the media world, and, when researching on media technology, one should consider both technology related to production, but also consumption of the media.

While countless representations of journalistic practices at present and in history largely ignore technological aspects and factors, a perspective on the “impacts” of technologies is virtually impossible.
It is thus necessary to take into account economic, social and cultural determinations of the history of usage of relevant technologies (Schreiber, Zimmermann, 2014, p. 9).

Natale and Balbi (2014) believed that, when researchers delve into the world of technology and the media, they need to consider several elements, such as “fear and enthusiasm for innovation and progress, as well as political, economic, cultural, and social issues” (p. 2).

Also, as Stephens (2007) explained, there have been long debates over the importance of the new media available at different stages in time, yet many of the enhancements they brought about have been received favorably, such as the fact that they allowed journalists to do their jobs faster. Yet what hasn’t really changed has been the array of topics that journalists choose to cover. Simply putting it, according to some scholars, the media covers the same topics, but faster and better, yet still relies on the same classical topics related to casualties, crime, war, and celebrity.

2.2.1. The telegraph and the inverted pyramid

Scanlan (2003) explained that, back in the 19th century, news followed a more narrative approach, focusing on a slow-paced style. Newspapers contained both stories and short facts, but all these always began not by emphasizing what was important to have been known, but by saying something that would lure the reader to keep reading and wonder what really happened. The once-upon-a-time style always reached a clear ending. Also, for many, news as we defined it today began with speed, with bringing information to people fast. This, historically, is connected to the advent of the telegraph, invented in 1845 by Samuel Morse.
Within a month newspapers began taking advantage of Morse’s telegraph – which would allow them to publish today news of the major events yesterday in any city to which they were connected by a reliable wire. Newspapers would soon become the primary customers of the telegraph companies (Stephens, 2007, p. 215).

Schreiber and Zimmermann (2014) argued that one of the most important contributions of the telegraph as a new technology at the time was helping people transmit information very fast. But using the telegraph was nothing creative. There were specific rules and protocols for operating it, for both sending out information and for receiving information from a second party. The telegraph was not only a new invention, but helped create new ways of communicating, more condensed and concise. “In concentrating on the essence of a message, and favouring a short, fact-oriented narrative, telegram style symbolized anew kind of ‘rationalized’ communication” (p. 33).

Stephens (2007) believed this also had tremendous impact on the news and introduces a different writing style. At the time, the telegraph lines were unstable, not always fostering proper communication between parties. Reporters, who were constantly rushing to get information fast to their audience, started focused on writing the most important information in the beginning of their communication. This style was used for the New York Tribune’s coverage of President Lincoln’s assassination.

The telegraph brought as much innovation as the Internet, since at the time, Scanlan (2003) noted, “it took two days for a letter to travel from Washington to New York, and a letter to the West Coast took a month by stagecoach or steamer via Panama” (para. 6). At the same time, the technology was expensive, charging one penny per character, one more reason for journalists to not abuse it.

Newspapers spent hundreds of thousands of dollars in telegraph costs to report
the Civil War. That economic pressure more than anything else influenced a new kind of writing that departed from the flowery language of the 19th century – it was concise, stripped of opinion and detail. Fueling the shift in writing style was a new type of news organization, named the “wire service” after the technology used to transmit the news (Scanlan, 2003).

Schreiber and Zimmermann (2014) also explained that the world saw an increase in popular press culture that displayed more interest in people, crime and sensationalism. The editorial policies changed, encouraging now “short articles written in a simple style” (p. 33). Daily newspapers now aimed at attracting a less elitist type of audience, focusing on the lower middle-class and also on the working class. The new style of writing promoted now by media organizations was ideal for people who only had time to skim through the news of the day and get their information faster, in a condensed way.

2.2.2. Broadcast and the “livid” journalists

As Barnouw (1990) wrote, the reaction towards the first forms of broadcasting was controversial, more so because, even the telephone invented by Alexander Graham Bell in 1876 had been met with intrigue. In fact, artists depicted it in many ways, such as one for the New York Daily Graphics that talked about the “Terrors of the Telephone”, showing “an orator at a microphone heard by groups of people around the world” (p. 3).

Stephens (2007) mentioned that, when the telegraph came along, it was praised for its speed and the fact that it could connect the world. There have been numerous debates around it that continued when new inventions surged. “Enthusiasts gushed over each of them; critics moaned. Writing, it was recognized, provided a
great intellectual tool, but Socrates, according to Plato, complained that the ability to write things down would weaken our memories” (p. 266). The same debates arose with many later forms of innovation, such as the telephone, the radio, television, cable, and the computer.

Yet, as Gugliota (2007) noted, radio brought many changes although no one foresaw it at the time. In the 19th century, when it was created, people believe that there was no more room for any kind of wireless communication after the arrival of the telegraph and the telephone. It is in this landscape that Nikola Tesla submitted a radio signal over short distances, in 1893. Later, Giuglielmo Marconi “accidentally discovered that grounded antennas could send signals more than a mile instead of a few hundred yards” (para. 3). This was the beginning of radio.

Stephens (2007) argued that radio was not a product of two people, but a conglomerate of previous discoveries, such as the electromagnetic waves, the telegraph, and the telephone itself, all these innovations whose purpose had been facilitating inside communication in different industries such as naval or military. Back in the 1920s, Harry P. Davis, the executive at Westinghouse, a manufacturing company, realized that instead of using radio as a private mean of communication, this should go public. The company also hoped to increase their revenue by selling the radio devices that people had to use in order to experience radio. In November, Westinghouse launched KDKA, the first commercial radio station, located in Pittsburg.

Broadcast started with radio and later turned into what we now call electronic media, as Medoff and Kaye (2011) noted. The new medium was intensely promoted by the print media and in school. But radio really caught on in the late 1920s when it
introduced music and other types of programs” (p. 5).

Yet, as Abell (2010) described, radio was not easily embraced by the media industry, as it was considered a medium that was not reaching too many people, was hard to understand, and only geeks enjoyed working with it. Also, it wasn’t yet an interesting medium for the masses. Its shows were live, contained music, and were owned by radio manufacturers that were mainly interested in boosting their profits. On the other hand, traditional newsrooms saw radio as a threat, as radio, unlike newspapers, could broadcast immediate information. Newspaper owners wished to get hold of this new medium and acquired stations to be in this industry from the beginning. This was the case of WWJ, Detroit’s radio station, purchase by the Scrips family, who owned The Detroit News newspaper. The family’s intention was to create a news radio, and, to do so, reached out to a teenager to help them better understand what their service should be about and how to build it. The first radio news show is said to have aired in 1920.

According to Barnouw (1990), ever since the late 1870s, the concept of television began capturing the fantasies of artists that tried to imagine how images could travel just as sound now traveled.

Albert Robida drew a series of pictures that embodied more startling predictions. Families of the future world, as he saw it, watch a distant war from the comfort of the living room. In his imagination, the screen on the wall would also allow people to take courses taught by a faraway teacher. And it would enable the housewife to survey goods for sale, and her husband to watch a girlie show – all from the comfort of home (Barnouw, 1990, p. 4).

Dary (1971) mentioned television also came about after a series of other inventions and discoveries, such as the discovery of selenium (1817), or the invention of a scanning disc capable of transmitting images using no wire connection (1884).
The first experiments related to television began in 1890, but it wasn’t until 1923 that the inventor of the “iconoscope” or the “TV camera tube” filed for a patent. The early stage TV was first demonstrated in 1925.

According to Stephens (2016), television, as an electronic medium, was introduced in 1927 in San Francisco by a 21-year-old, Philo Taylor Farnsworth, whose parents’ house had no electricity before he turned 14. Twelve years later, RCA, NBC’s mother company, broadcast the opening of the New York World’s Fair and a speech by President Franklin Delano Roosevelt.

According to Dary (1971), the first news program, a 15-minute one broadcast on a regular basis aired in 1941 on WCBW of CBS. There was no dedicated space for a newsroom, rather an improvised one in the studios. There was little investment in dedicated staff, and, after a year, news presentation eventually stopped. Attempts were made again at the end of the war in 1944, with long news programs that lasted for 14 hours. After the war, stations that managed to survive and make the most out of their resources improved their daily schedule, while some other stations that shut down came back to life.

Dary (1971) also noted that, when this technology caught on, TV networks started to increase their production of news. Still, newsrooms had problems in understanding what TV should be about, experimenting in-house with using well-known radio newsmen and have them read the news in a TV studio. As this was a non-engaging activity for viewers, they started investing more in footage and also in hiring people to shoot film. Soon, the industry itself began paying more attention to how people looked on camera and rank them based on their physical features. Competition increased, but inside the television stations people struggled with the
large amount of time that was necessary to put together a television program, with making the technology more reliable, and with differentiating themselves from show business. It wasn’t until the 1960s that television reached a level of maturity, after the technology behind it matured. TV stations now dedicated more time in creating TV personas, journalists whose knowledge needed to include not just news training, but also understand TV and film. They also had to look good on camera and have a pleasant tone of voice.

Stephens (1998) said television, at the time, spread at a very fast pace in the American household, unlike well-known products, such as the computers made by Apple or IBM that took even decades to reach the personal consumer.

Yet, according to Jackaway (1994), the enthusiasm was also met with skepticism among the industry, as broadcast soon started competing with older media. Newspapers now not only battled radio, but also television, although print media had been the main information source for Americans for more than 100 years. “Not surprisingly, print journalists were livid. They spent nearly a decade trying to block the emergence of broadcast journalism” (p. 1).

According to Jackaway (1994), the press-radio war has been just one in many other such wars carried between older and newer media. Conflict arose because of technology, specifically when an emergent media industry took off powered by a new technology in communication. “Both the newspapers and the film industry fought the introduction of radio. Hollywood also balked at the introduction of television. Broadcast television struggled against the introduction of cable” (p. 1).
2.2.3. The Internet of everything

As Medoff and Kaye (2011) noted that, for more than a century, electronic media have been a part of Americans’ lives, with rather clear effects: cognitive (we get a high quantity of information through electronic media, that otherwise would have been unavailable to us), emotional (we are influenced by whatever electronic media we consume), behavioral (we are being persuaded to act in a certain way as a consequence of the things we see and hear).

Leiner et al (2012) mentioned that talks about a form of “social interactions that could be enabled through networking” started in the early 1960s, and the first form of what we now call “Internet” was presented in the 70s. That’s also when an early version of the e-mail was created. In the 80s, more and more workstations were added to the equation (p. 2). Yet the Internet evolved from the idea of sharing between parties to a global network operating on personal computers. The Internet is now the place where billions of dollars are invested every year. (p. 14).

For Sullivan (2006), the World Wide Web also changed the media industry, as advertising focused on the online options and leave print behind. The death of magazines and newspapers has been a constant topic since the early 2000s, as rumors about the Internet replacing TV and radio because of its speed and more options of sharing content increased.

According to journalists referenced by Master (2009), Internet began hurting media professionals more that it helped them, and the branch couldn’t really take advantage of online news and ignore the disadvantages. Inside newsrooms, online content affected their finance models and made in-depth reporting seemed not worthy of such high investment considering that online news production was much cheaper.
Also, media professionals noted that although they were reaching their audiences better, they hadn’t found a way of efficiently monetizing online content. They were also raising the issue of how readers were excited of the quantity of content they had at their disposal, but few still understood that this relied as usually on news production, which was something that newspapers, and not the Internet, did. Also, people in the newsrooms were also complaining that coverage now was more superficial and lacked context and historical meaning. Yet Krotoski (2011) noted that journalists also recognized its value for getting closer to their audiences, for if “knowledge is power, the web is the greatest tool in the history of the world” (para. 4).

As depicted by Aasman (2014), researchers, as well as professionals began believing that a good answer for dealing with both the opportunities and challenges of the Web, as well as digitalization, was embracing a convergence newsroom model, a fully integrated newsroom where platforms and organizations would cooperate.

The emergence of web 2.0 provided a switch to a model of two-way media, thanks to new means of distribution that delivered the basic technological prerequisite for a truly interactive media practice. For the first time in the history of mass-media, the growing means for distribution altered the power of licensed broadcast institutions. It can be seen as a form of true democratization: in principle every citizen can participate. (Aasman, 2014, p. 49).

At the same time, more and more media outlets engaged in new technologies, that, through the use of digital, created more interactive content, such as interactive stories through multimedia, data visualization, virtual reality and so on. In 2008, during the presidential elections, CNN introduced the tomogram-reporter, which was the image of a person shot in a different space from all sides whose image was rebuilt in an apparent 3D method and displayed on screen. 2012 saw the birth of a dedicated

Two new technologies to watch at the moment are voice-recognition and virtual reality, both highly discussed and debated. Voice technology have become so accurate in the past years that are now competing with humans. Voice bring us in a new era of interaction with our machines, away from point and click, or touch, and also might begin to redefine the media. How the audience should access news and stories through voice-enabled technology is yet another question that journalists need to answer. Another very important question is the content that they will request and get once voice assistants will be able to not just process language, but also understand the meaning of words. Simply putting it, technology aims towards being able to curate and peruse through news once the user asks a simple question such as ‘What happened today on my street?’ (Marconi, 2016; Nordrum, 2017).

Virtual reality (VR) and augmented reality (AR) are also booming industries, expected to reach $160 million by 2020. The biggest part of this revenue will come from hardware sales primarily in the United States. When used in storytelling, this technology allows users to better immerse themselves in the narrative and live more authentic experiences. The costs are also getting lower, making the technology more and more accessible to newsrooms across the United States. Also, VR equipment is also getting easier to handle and use (BI Intelligence, 2016; Doyle, Gelman & Gill, 2016).
2. 4. Searching for a new business model

As Belam (2010) noted, technology tremendously increased the speed of information. The audience now didn’t need to wait for the next-day newspaper to get more information on something that was happening, but rather went online and explored what was published in real time. Cheaper ways of transmitting information increased competition among media outlets, and also the public ability to critique their work. Journalists in the digital age had more means to reach their audience and engaged in work on multiple platforms, with more diversified tools.

Technology still posed problems for media professionals. Studies show that simple tools such as Twitter still caused tension and conflict in newsrooms, in spite of making journalists’ jobs easier. The advent of online media made newsrooms reconsider their finances. Their advertising revenue dropped, as advertisers preferred to invest more in online and use more targeted methods of reaching their own audience. The staff was cut, and many newsrooms learned how to work with freelancers. The Internet has brought about challenges that traditional media was still trying to understand and respond to (Chadha & Wells, 2016; Taylor, n.d.).

The main challenge is finding a revenue model that will ensure sustainability on the long run, as the media lost its dominance in terms of publishing platforms. Today, anyone can publish content on social media, blogs, or video channels. Major media outlets across the United States engage in in-depth research and analyses on what new methods would ensure long term survival. The New York Times, for instance, published a report on their ambitions for 2020, stating a need for transformation to ensure survival on the market. Their main plan was to heavily increase the number of digital subscribers. The newspapers announced it would do so
by enhancing the quality of their diversified portfolio of products, from visuals, to interactives and investigative pieces. This is after their plans of turning into a subscription-first media outlet working with the best in the media business turned successful. Yet the company believes it still has a long way to go, especially when it comes to engaging the vast array of tools available for telling stories (Satell, 2016; The Report of the 2020, 2017).

2.5. Social impacts of technology in newsrooms

Saltzis and Dickinson (2008) noted that, with the advent of new technologies, it seemed that newsrooms were heading towards definitive digitalization. More and more skills needed to be combined. Media outlets worked more together than they used to. Newsrooms were now oriented towards multimedia production that required integration of multiple resources. Yet there were consequences for the changes that technology brought about for journalists. One of them is the requirement for media professionals to handle multiple varied technological tasks. This translated into more stress (mainly because news production needed to take place faster) and into the lowering of journalistic standards. Also, while newsrooms were looking for versatile journalists, capable of reporting on multiple platforms, reality showed that these people were still a minority and they were usually new hires. Those who already worked in newsrooms were sometimes more expensive to train and didn’t appreciate change.

Sillesen (2014) mentioned that another impact of new technology in journalism has been the newsroom’s obsession towards increasing online traffic and compromise content quality, causing journalists to quit their jobs. Greenslade (2014)
argued that another important impact of technology in newsrooms was given by the impression that media outlets were now seeking for fewer people who could do well-researched stories, but rather for more people who could produce more content often taken from other sources, not originally reported. This indicated potential problems as, for years, studies such as the one carried by Bergen and Weaver (1988), had been linking job satisfaction among journalists to their perception on the quality of the work that their organization was doing.

In another study on a newsroom undergoing changes including from a technological perspective, Ekdale, Singer, Tully, and Harmsen (2015) also noted that, while journalists received new technologies with a positive attitude and thought this was a good way of getting their work to be more effective, media professionals were concerned that having to engage in producing content on various platforms might affect the quality of their work.

Also, an analysis performed by Chadwick (2014) revealed that journalists in broadcast were aware of the imminent changes brought about by technology and acknowledged that their chances of survival as organizations were connected to how well they adapted to technology.

2.6. Theoretical framework

Change affects everyone and is not easily handled. Innovation brings about tremendous change and thus is related to different types of theories about how people react to it, embrace it or avoid it at all costs.

For the purpose of this research, I will look into two such theories, the Theory of Reasoned Action (TRA) and the Technology Acceptance Model (TAM).
Ajzen and Fishbein (1980) first introduced TRA in 1967 and tested throughout the following years. The theory functions around the idea that it doesn’t take more than a rather small number of factors to influence behavior, contrary to popular belief that there is a need for a vast array of reasons to shape our actions. TRA assumes that people are rational when using available information, rather than act based on impulses and caprice. The Theory of Reasoned Action illustrates a deeper thought process and a decision-making process before embracing a specific behavior. Its purpose is thus predicting and understanding how humans behave. “According to the Theory of Reasoned Action, a person’s intention is a function of two basic determinants, one personal in nature and the other one reflecting social influence” (p. 6). The personal factor refers to the attitude towards adopting a specific kind of behavior. Simply putting it, what the person think that behavior would bring about. The second major factor has to do with social perceptions. People are interested in whether what they do is a good thing and if others around perceive with the same positive attitude.

![Diagram of Theory of Reasoned Action (TRA)](Cited from Ajzen & Fishbein, 1980)

Figure 1. Theory of Reasoned Action (TRA) (Cited from Ajzen & Fishbein, 1980)
While the model seems to function under the described limitations, researchers have criticized it for situations that do not fit the author’s framework.

In particular, the Fishbein and Ajzen’s model is applied frequently to situations in which (1) the target behavior is not completely under the subjects’ volitional control, (2) the situation involves choice problem not explicitly addressed by Fishbein and Ajzen, and/or (3) subjects’ intentions are assessed when it is possible to form a completely confident intention (Sheppard et al, 1988, p. 325).

Yet it was applied to several types of research, such as technology related research. One such study carried by Doane, Kelley, and Pearson (2016) at a university in south Virginia on 167 students applied it for estimating how effective cyberbullying prevention programs are by creating a video program around the aforementioned theory in order to “increase cyberbullying knowledge (1) and empathy toward cyberbullying victims (2), reduce favorable attitudes toward cyberbullying (3), decrease positive injunctive (4) and descriptive norms about cyberbullying (5), and reduce cyberbullying intentions (6) and cyberbullying behavior (7)” (p. 136). The research showed results right after the program, with subjects improving their knowledge on the matter, their empathy towards victims, attitude towards understanding cyberbullying and the norms related to causing harm and public humiliation. Also, after a month follow up the study showed that a short such video “is capable of improving, at one-month follow-up, cyberbullying knowledge, cyberbullying perpetration behavior, and TRA constructs known to predict cyberbullying perpetration” (p. 136).

Davis (1986) from the University of Arkansas proposed another theory relevant for my research, called the Technology Acceptance Model (TAM), a model that strives to estimate whether or not an information system will be accepted based
on intentions to use a technology, and identify any kind of problems potential users might have with the system even before they start using it.

According to the model, a potential user's overall attitude toward using a given system is hypothesized to be a major determinant of whether or not he actually uses it. Attitude toward using, in turn, is a function of two major beliefs: perceived usefulness and perceived ease of use. Perceived ease of use has a causal effect on perceived usefulness. (Davis, 1986, pp. 24-25).

The theory has been successfully extended and used in numerous research studies. One such study, for instance, carried by Muk and Chung (2015) applied it to advertising research, in order to find out whether or not consumers are willing to accept advertising in the form of phone text messages. The study used data from the United States and Korea to test the theory and concept and its validity across cultures. Results revealed that the model was valid in both countries, and that usefulness was an important factor in contouring a positive attitude towards such type of product or service promotion.

TAM was also successfully applied in studies related to mobile payment in South Korea back in 2010. It is then when Kima, Mirusnomov and Lee (2010) showed that, at the time, the main key elements in TAM, perceived ease of use and perceived friendliness, were the main factors indicating if their subjects in schools, universities, research centers, companies and Internet cafes were willing to embrace this technology or resist it.

Yet, according to Persico (2014), the Technology Acceptance Model proved its limitations in situations such as evaluating more complex systems, such as e-learning systems. Researchers say that accepting a specific type of technology does not guarantee that one can assess the impact of innovation in education, and studies need to take into consideration other quality references. Another study of Holden and
Karsh (2010) reviewed its application to healthcare and showed that, while the model is useful for understanding how people adopt technology, it doesn’t fully match the particularities of the health industry, the context of research, nor the characteristics of health care professionals. Thus TAM needs to be adapted to best fit a field’s particularities.

Both the Theory of Reasoned Action and the Technology Acceptance Model will help interpret my results and offer explanations that will best answer my research question.
Chapter 3. Methodology

3.1 Purpose of the study

The purpose of my thesis is to explore what influences the adoption or resistance to new technologies by newspaper news producers (reporters of all beats and categories, including multimedia reporters), and indicate if they are willing or reluctant to embrace new technologies. I looked at how these news producers dealt with technology throughout time, referring to the previous adoption of fully embraced technologies in their newsrooms, and analyzing their reactions and attitudes toward potential new technologies that could be incorporated in their work.

Research question: What factors do non-management newspaper news producers perceive as influencing the adoption or rejection of new technologies by their newsroom?

To answer my research question, I used a qualitative research method in the form of semi-structured interviews created around my two aforementioned theories, the Theory of Reasoned Action (TRA) and the Technological Acceptance Model (TAM). My goal was to show how newspaper reporters reacted to new technologies in the past and how likely they believe their newsrooms are to either reject or adopt new technologies and why.

I chose to perform a qualitative research as behavior and reactions to embracing the new, in this case the technological new, are a very complex and subjective process that can be reflected in a type of research that “is especially effective in obtaining culturally specific information about the values, opinions, behaviors, and social contexts of particular populations” (Mack et al, 2005, p. 1).
Also, I selected qualitative semi-structured interviews as my method of research because, according to Kvale and Brinkmann (2009), this is a method that “attempts to understand the subjects’ points of view, to unfold the meaning of their experiences, to uncover their lived world prior to scientific explanations” (p. 1). Also, Fontana & Frey (2005) explain that a semi-structured interview has a predefined set of questions that the researcher is asking the respondent, but also allows for an organic conversation to happen in between these questions.

Furthermore, this method suited both my available time for research and my resources, as media contacts were easy to reach in the institution that hosts my research, and were willing to engage in a conversation on the matter. Also, according to the Bernard (1988), semi-structured interviews are ideal for situations when the researcher might not be able to reach his or her sources more than once throughout the research. This happened in my case as well, as media professionals have a very busy schedule.

At the same time, I chose semi-structured interviews, as this is a research method that I know and enjoy, being similar to a style of interview that reporters use. Semi-structured interviews allow the interviewee to easily complete the discussed topic with his or her own thoughts and invites for a more open and relaxed conversation.

3.2 The research sample

For the purpose of this paper, I used 11 semi-structured interviews with news producers, working in various newspaper newsrooms across the United States. My research sample fell into the typical instance sample, as defined by Tracy (2013), that
consists of subjects that are most likely to be included in such research due to their characteristics and familiarity with the topic. In my case journalists were the most aware of the technological changes that happen inside their organizations. I also focused on 11 interviews as the same author mentioned that qualitative researchers need to focus on the quality of the interviews and not risk gathering too much information that might be hard to interpret. As my time and resources were limited, I aimed towards a “satisficing” result, rather than an optimal one. This type of result, according to Herbert (1979), produces an appropriate result, but not the optimal, as the optimal solution is hard to determine or is out of reach.

I considered finding subjects that, according to Creswell (2007) are relevant for my research and easy to access. I interviewed both men and women, of all ages and education levels, who talked about their perception on their newsrooms’ position regarding new technologies. They had to be employees of newspapers in the United States and have non-management positions.

I focused on selecting newsrooms that have undergone at least once the process of adapting to a new technology at a specific moment in time. I found these people through recommendations of my committee members in the Missouri School of Journalism and my own contacts in the American media.

3.3 Interview protocol

According to the theories described above, my set of questions tried to explain how newspaper news producers have made their previous decisions of adopting or rejecting technologies at their workplace and predicted future actions related to the adoption or rejection of new technologies in newspaper newsrooms.
The Theory of Reasoned Action guided my interview questions, as I was inquiring and referencing variables that usually influenced a new action, such as the personal attitude towards that action (in this case the reporters’ attitude towards adopting a technology) and also society’s perceived attitude towards the action (in this case, the industry’s and the audience’s perceived attitude towards adopting a technology). The Technology Acceptance Model helped me better define the attitude variable in the Theory of Reasoned Action from the perspective of user friendliness and usefulness.

I made a list of newspapers that I was interested in. I selected them based on the places I established contacts in my career as a professional journalist, the newspapers’ reputation, and their location. I was looking at having newspapers from various parts of the country. For newspapers I have no contacts in or no recommendations from my committee, but decided they would be a good fit, I used LinkedIn to reach out to reporters working there.

My subjects were men and women, of all ages, covering any beat. I reached out to them by email. The received an introduction of who I was and what I was research about, as well as what made me qualified to research on this. I explained their participation was voluntary and required their written consent. I attached a consent form that they signed in order to proceed further. They also received a questionnaire with preliminary demographical questions and questions related to their technology experience that helped me better categorize and code my data, as well as better structure my interviews. I explained that the data, their identify, and the identity of the newspapers they work for would be kept entirely confidential. It would be stored securely under password for the sole purpose of this research and destroyed.
seven years later.

The interviews lasted around 40 minutes each, and contained 12 main questions that didn’t change from one respondent to another. Additional inquiries completed the interviews. They varied from one respondent to another, depending on the conversation. Interviews were via phone or Skype, at an appropriate time and place for my sources, in order to lower any kind of outside distraction that would interfere with their answers, as well as to protect their privacy. Interviews were recorded after the respondent’s consent. Identities were kept confidential at all times. Audio files will be kept password-protected and destroyed after seven years.

For questions that had to do with new, not yet adopted technologies that my respondents didn’t know about, I invited them to mention that and I provide a short description of that technology. Throughout the interview, I made sure they stayed on topic, but also engaged them with additional questions. I ended the interview by thanking them for their time, and mentioning I might be following up with an email for fact-checking information or complete missing information, if their answers were not clear. I also performed a pilot interview to make sure the questions were easy to understand. That interview was not recorded and not integrated in the analysis, as it was designed to just validate the structure of my actual interviews.

3.4 Analyzing the data

For answering the research questions, I analyzed the interviews by coding the data after transcribing them. The coding method requires the researcher to read carefully every transcript (I will read them as a whole, not separate them based on each question) and make annotation using a word or group of words that summarize
what the information is about every step of the way. The researcher then groups these codes based on their common topic. It is useful for when the researcher is looking for patterns that can illustrate the theories described in the research framework (Saldaña, 2009).

For illustrating the coding method, I am giving an example of an answer to one of the questions in the interview plan. The codes don’t show up in my paper, only in my analysis. The code numbers represent comments I inserted into the Word document.

Question:
How would you describe your newsroom’s attitude towards technology?

Answer:

1. Our paper is trying to invest in new types of storytelling like hiring a data team, but I think some of the criticism in the past with some people in the newsroom is that, while we do have two or three member data team, they should be investing more resources in that. That the data team is still backed up with requests from other people in the newsrooms on simple tasks that people could do, like create their own charts or things like that. But they don’t have the skills to do it and to the data team is backed up with a lot of requests...

2. INTEREST IN TECHNOLOGY
3. OVERBURDENTED WITH TASKS
4. MONEY ISSUES
5. LACK OF SKILLS/TRAINING

After identifying all topics in all 11 transcripts, I grouped them in a table, with columns corresponding to each respondent.
I highlighted similar topics with the same color. Every color became a theme whose importance I assessed by the number of times it was referenced in my interviews. I made another table with the themes organized from top to bottom in the order of their importance. I proceeded with commenting on the data and structuring my discussion so that every theme became a sub-header sometimes including more sub-sub-headers. Throughout my analysis, I constantly reviewed the context of my quotes or referenced information and recoded if necessary.

In order to answer my research question, according to TRA in this example the first code fell into a bigger theme related to leadership that oftentimes dictated the newsroom’s interest in technology. The second and last code fell into a bigger theme related to time required to learn a new technology (or lack of time because news producers tended to have too handle too many tasks at once), and the third one ended
up as a theme in itself, as the cost of technology or the potential revenue stream it generates is a clear indicator that a technology will be favored or not.

### 3.5 Limitations

The limitations of this research were deeply connected to my sources’ availability and willingness to engage in lengthy conversations, as well as in my skills as an interviewer. Interpreting the data took a significant amount of time that was reduced by using automated transcription services, as well as software to better categorize and display my sources’ answers. Also, I relied on my sources’ answers, and didn’t have a way of testing if what they told me was the truth about what they thought or not.

The research did not attempt to predict how the entire media system could react to new technologies, but used my sources as representatives of a specific type of behavior. Behavior, though, is unique and can greatly vary from one individual to another, depending on the context. Therefore, it is impossible to faithfully characterize the entire media system based on a small number of interviews. Also, a qualitative analysis is often better accompanied by a quantitative analysis that brings less disputable data into the matter, yet my available time and skills didn’t allow for that at the moment.

Also, I asked my sources to set up a convenient time for them and give them guidelines on finding a quiet place to be interviewed, but I couldn’t control their choices to make sure they fit my requirements. I also couldn’t control if my sources were well rested or not rushing through the interview because of conflicts in their schedule. My sources might also have had personal conflicts with their newsrooms,
which I didn’t find out about during my research.

This research can be expanded to incorporating more respondents categorized by types of media outlets they work for (television stations, web platforms, radio, etc.) and by the type of adoption they represent (early adopters, slow adopters, etc.). It can include a behavioral analysis of different organizational positions (reporter, editor, etc.) to see if different positions perceive technology in different way. It can also expand to include quantitative analyses to illustrate the rate with which new technologies have penetrated certain newsrooms or the national media and correlate it with the average age and demographics in each newsroom, categorize it by state, budget, and revenue model, all factors that impact the adoption of technology.
Chapter 4. Discussion and Analysis

For the purpose of this research, I interviewed 11 newspaper news producers working in various newsrooms on the West Coast, South, Midwest, and East Coast. I used semi-structured interviews, as well as one questionnaire which I prior sent to my interviewees in order to better structure my interviews. I aimed toward a “satisficing” result, rather than an optimal one, yet answers started repeating beginning my second interview. Conversations were carried over the phone and lasted about 40 minutes each. Everything was recorded and kept completely confidential.

My research showed that the news producers for American newspapers have a positive attitude towards embracing technology, but it is complicated when management strategies come into play.

News producers acted as predicted by Technology Acceptance Model, as in wishing to incorporate technologies that were both easy to use and useful. They have, however, often compromised when it came to ease of use if a specific technology proved helpful to them. They would even undergo training for that technology, provided it promises benefits in the future.

They also followed the components of the Theory of Reasoned Action. News producers believed news organizations are more willing to adopt technology that is already adopted and used by other newsrooms or journalists, even though it may not fit in the overall structure of their own newsroom. They also expressed their interest in adopting technology that they believe would yield a positive result and benefit them in their work.
The 11 news producers that I interviewed all agreed that technology is indeed beneficial during this day and age, as long as it helps their work and does not overburden them with unrelated tasks. They also appreciated seeing their newsroom proactively adopting technology, yet they would strongly prefer to know there is a comprehensive and clear management strategy behind any decision related to the topic. They would prefer technology was customized and implemented according to specific needs in their newsrooms, not according to the industry’s needs or trends at the time.

“The general feeling is that we should be using technology more, but there are no guidelines for how this should look like. Or like why,” one reporter working for a Midwestern newspaper said. “It’s like more of a push. Use more technology, but just for the sake of doing it. Not necessarily to add anything to the journalism.”

Also, technology seems to be more embraced by newspapers on the coasts, rather than those in the South or the Midwest. Age was also a factor, with younger people being more open to new technology.

All interviewees said management should offer proof that certain technologies as useful, as opposed to imposing those technologies onto them. At the same time, simplifying too many specific tasks just for the sake of productivity and potential revenue seemed to generate frustration among subjects, who often said they felt they are wasting their time creating low quality content for no obvious purpose. As one reporter working for a large Midwestern newspaper said:

Some of the older editors are bandwagoning. They just think that everyone should be using Twitter and Facebook Live, and everyone is doing video, but they don’t realize how to use them or how a reporter should best use them. They just think that, if a technology exists at other publication, we should be using it too.
All in all, news producers said newsrooms adopt or embrace technology based on the leadership style in the media company, trends in the media, newsrooms’ openness towards new technology, the characteristics of those technologies, and money aspects.

4.1. Leadership

4.1.1. Lack of a unitary vision

The majority of the reporters I interviewed said that, in order for newsrooms to adopt technology easier, they feel their leadership should have a technology-oriented management vision. Most said that the older the journalists in the newsroom are, the less likely they are to keep up with the times and embrace the new. Yet there is still a problem when it comes to management itself understanding technology. One reporter working on the West Coast said that management needs to have “vision, like having a leader that is familiar with the technology.” If the leadership is “caught up more in the old ways of gathering information and they are not educated on all the new different technologies,” it would be harder to convince them of whatever change news producers feel needs to happen in the organization.

Also, the reporters said management is seldom held accountable for the decisions that it implements and there is no real system in place to evaluate those decisions from the bottom up. One West Coast reporter talked about such issues:

In all the newsrooms that I've work in, the reporters have never been able to evaluate their managers. There's never been a 360-review process. And so, a lot of the decisions are very much from the top down. And although the reporters can weigh in on these types of decisions, they aren't the final decision maker. Even if there’s a bad decision that's made up high, there's no real recourse to try to address that.
Adopting technology is often not just a management decision, but rather a consequence of news producers experimenting with it themselves. A reporter who works for a metropolitan newspaper on the West Coast weighed in on the matter:

As we’ve seen with things like being able to check our work emails on our iPhones or using cloud, that all comes from the people bottom. They start using it at the bottom, the top people notice it and then the IT department works with the people at the bottom to try to maybe adopt these types of things like in the rest of the organization.

At the same time, reporters said that, even if midlevel management understood technology, the corporate ownership would put up barriers. Another reporter working for a regional newspaper in the Midwest said:

Anything would be done at the [Name] but, you know, purchasing wise, but you've got to be able to ultimately get the approval from [Name of the parent company]. I mean, they can spend the money if they want to at the newspaper, but it's got to make sense in the overall picture.

4.1.2. Open to suggestions, but no guarantees

All reporters that I interviewed said that they have no role in the decision-making process regarding procuring new technologies, yet the majority of them did have the power to suggest specific tools to their superiors. A reporter covering technology for a major West Coast newspaper shared her experience:

We do have a questionnaire in our newsroom that goes out asking what kind of technology people need. That weighs in on the decision making. But, as individuals, we can also make suggestions to our bosses on what kind of technology we need.

An investigative reporter from the same area said that there is always an open line of communication between the reporters and the editors in terms of adopting a new piece of technology. “I would just go to my direct editor and tell him what I wanted to use and then see if I could get permission to do that,” she said. “Or like
[tell] them to cover the costs or you know whatever the situation might be, so I mean there's definitely a possible line of communication”.

Yet some of the reporters I interviewed also said that, even though this line of communication is open, they have little faith that these suggestions that they make are actually considered.

“I do you bring up stuff but not all my suggestions go through,” the aforesaid technology reporter said. Another reporter working for a Midwest newspaper, covering sports, reiterated. “If I saw something I thought would be useful, I could go to my editor and say, ‘Hey, I think we should have this’. Now, it would be their decision whether they would actually like to pay for it.”

4.1.3. The bandwagon

For the most part, journalists that I interviewed said that one reason why their newsrooms seemed to adopt a specific technology had to do with the fact that other newsrooms had already adopted it. They perceived the strategy behind the adoption of technology as having to do with a “bandwagon” mentality. They said that, most of the time, their newspapers adopt specific devices or software mainly because other similar media outlets use it. They mostly referred to Videolicious, a mobile app used for producing videos on the go (Videolicious.com, n.d.), or Tableau, a data visualization software (Tableau.com, n.d.). One reporter working for a Midwestern newspaper explained how he perceives his newsroom’s attitude towards technology:

A lot of the time people would just latch onto the next big app that another newspaper is using. Videolicious or Tableau - I mean that one made sense - but it seems like if something becomes an industry standard, like everyone has to use it, and not all the time has a lot of value.
The reporter also said that newspapers seem almost desperate to try out anything that might bring them more revenue.

Sometimes it’s just all about what they can get. Sometimes a lot of newspapers would still equate click with money so whatever they can get to make people click more or to stand on a page longer they’ll try to do that. This is a pressure lately.

At the same time, as one reporter working for a large Midwestern newspaper said, newsrooms are throwing themselves into trying anything new also because they desperately want to generate more revenue, without necessarily understanding how specific technologies should best serve them.

As more and more publications are seeing their print editions chopped and going digital first, like people use technology to read the news more than they use the newspaper to read the news, so it makes sense that people in charge are trying to find ways to better reach people using different means of technology. I just don’t know if they always know why they are trying something. They are kind of desperate to find some ways to reach people and to get people to pay for the news.

This desperation, another Midwestern reporter said, is very counterproductive to the media outlet’s reputation. As companies force untested technology or technology that has not yet proven helpful, reporters think this strategy is only hurting the media brand and doesn’t generate the promised revenue. “You are selling your soul a little bit,” he said.

The same reporter said that in two newsrooms he worked in, there was an increased push for video content, in spite of people not being properly trained for producing video. The reason, he said, had to do with the sales team saying that they might increase revenue by placing ads in videos, as there is a high demand for video ads. While this might make sense in the grand scheme of things, “if you are not producing quality video, this is going to bite you.”
4.2. Efficiency

The majority of reporters I interviewed said that financial efficiency is an important aspect when it comes to adopting or rejecting technology. The newspaper news producers I talked to said they believe that companies are more likely to adopt a technology if it doesn’t cost too much and if it promises to generate more revenue. These decisions, they said, are often part of a bigger corporation chain or management decisions if the company is owned by a corporation that needs to approve their spendings. Yet news producers didn’t elaborate on the matter, most likely because they don’t handle the finances of their newsrooms and don’t have purchasing power. They most likely don’t know who exactly needs to approve the purchase of new technologies either. They said they can make suggestions, but don’t necessarily see these suggestions implemented. If this is an issue related to the cost of those technologies or the potential revenue stream that management fails to see in them, they don’t seem to know.

One reporter working at a small newspaper in the North said revenue is what newspapers are all about. Her newspaper saw the potential in digital advertising and immediately started investing in this area.

And so, as they saw the opportunities there, I think they were willing to try more and more new things with technology. Because they saw the financial results to back that. I think it comes down to just seeing the revenue stream that comes in from it and the benefits of using technology.

Another reporter working for a metropolitan newspaper on the West Coast said that making more money is also the reason why her newsroom started pressuring news producers to do more video stories.

My understanding is that there's a higher demand for ads on video. So the more videos that people put out, then they can add ads to them and then we
make more money. And then it’s kind of a win-win for advertising and theoretically we get more clicks. So they’ve really emphasized that by offering some incentive on it. And then by doing these trainings that people find useful for that. And I feel that, if they did a similar rollout for other types of technology, maybe more people would be willing to grasp it. But it just doesn’t seem like those other types of technologies are as much of a priority right now compared to video.

Another important point made by someone working for a regional media outlet in the South was that lack of money in the newsroom translated into the management being desperate to try out new things, while a more stable company would go with a more traditional approach.

If a company is looking for revenue, they’re going to be more prone to getting any kind of users that they can, be it through Snapchat or whatever app. Any kind of bullshit like that. VR stuff. They’re going to be hungry. They’re going to look at that. If a company is doing pretty good, you’re rarely going to see them investing some assets into something like this, like a new revenue builder. Because 99% of the time is not going to take off.

The cost of learning the technology is also something news producers brought up, which, for them, is a cost of time.

The reporters said they would participate in training only if it’s required or if they have the time to do that. If it is not required, they admitted that most of the time their busy schedule wouldn’t allow them to attend training sessions during work hours. The same reporter said:

If it’s a busy day, no way am I going to waste two hours on a tutorial on how to make yourself a better journalist on social media, because we’ve all sat through that shit over and over again. If a new technology was coming in, I’d probably be sitting on that. But it’s marginal time spent. If after two minutes of being in there it seems to be worth it, then I’d do it. Also, if employers provide lunch, you’ll see more people come.

All reporters that I interviewed said that they are more willing to embrace a technology if this technology is intuitive and doesn’t require too much training. Most of them prefer to start using anything first before deciding if they need to be taught
about how to use it.

Also, all of them said they would not read instructions, except for instructions given to them after workshops, such as a leaflet with the most important ideas. A reporter working for an East Coast national media outlet talked about his experience with getting trained to use technology:

I mean anything that’s new in something like a business terminal with training videos, I could watch that. But no, I would not read instruction manuals in general. I mean can you imagine if you had to read 100 pages before you start using Twitter? I don’t think so.

At the same time, reporters have said they are not happy to take over multiple tasks that have to do with technology as long as this might hinder them from focusing on what they really need to focus on, which is getting stories. “Everybody is open to technology, but it’s also a matter of how much time you actually have to do all that,” a reporter working for a regional newspaper in the Midwest said. He said his newsroom is pushing for more video these days and he finds that very time consuming. “And distracting while you are trying to report and interview somebody.”

4.3. Easy to use vs. useful. The main assets of any good technology

According to TAM, in order to predict if a technology will be embraced or rejected, one should look at users’ perception of its usefulness and ease of use. I asked reporters to talk about specific types of technologies that they have adopted or avoided in the past. While most of them said ease of use is an important factor in their decision to use a technology, usefulness was by far the most sought-after characteristic. Simply putting it, the news producers interviewed might accept struggling with a new technology or undergo training, but only if they perceive the new tool as something highly beneficial for their work.
That usefulness also helped the journalists better reach their audiences, they said. For instance, all reporters said that they adopted social media as part of their work at some point in their careers – most frequently Twitter, as it helped them in both the reporting process and also served as a distribution channel.

On the contrary, they avoided technology that didn’t seem to serve any of these purposes. For instance, Snapchat was perceived as not useful by people over 25 or for those not covering a beat whose sources or users are on Snapchat. A 48-year-old sports reporter said he underwent training on Snapchat because athletes tended to use it, and also younger people who watch sports. “A lot of the athletes that I follow like to share their stuff on Snapchat,” he said. “That's really the reason why I do it.” Another reporter covering technology for a newspaper in San Francisco said that Snapchat, even though a platform for younger people, is the way some reporters have to communicate with their younger sources or with people working for Snapchat.

I remember one colleague telling me, “Someone said, ‘Just snap me’” and she kind of said that in kind of a way that…. “Oh you know, snap me.” I guess maybe it's like today's version of direct message. It's just curious that, you know…. But it was different for her to send someone back a message on Snapchat. I haven't had that happen to me yet. It's dependent on what companies you cover. Because that person covers Snapchat, so I guess makes sense.

Lack of difficulty was sometimes said as being a key factor for adopting a technology. For a 69-year old reporter working for a local newspaper in the Northwest part of the country, this was the main reason why he first started using a word processor.

I remember somebody said, “Hey there’s this great new word processor that just came out.” Word was great. Word was really good. Before that, there was something that required you to learn all these commands, P, L, and so on. You needed to go through all these technical things before you could even type a letter. But Word really broke through, and I could feel creative. So, basically, until I had that sense that I could express myself freely and without having to
do a lot of technical stuff, I was resisting.

News producers said that, in order to be willing to embrace a technology, that technology needs to make sense in their overall jobs. For instance, a reporter working for a big Midwestern paper said that a video app that she is required to use, Videolicious, limits her creativity in video stories. She took classes in video storytelling, and this application that she believes has become a standard in the industry hinders her from using her skills because its functionalities are very basic.

Technology must also be non-invasive in order for reporters to find it appealing. A reporter working for a newspaper in the South said that he falls out of love with any service that pushes notifications or emails of any sort onto him.

I think we don’t want to be bothered. I think that’s just this thing with new technology that everyone needs to have. That hey, we’ll give you a free trial and whatever while you answer a questionnaire and get all these emails from us in a month period. But no, I don’t want it. And even if I’m not going to open that email, it still is a big pain in the ass to get an email from you guys every day. It annoys me.

### 4.4 Age in the newsroom

The majority of the reporters I interviewed said that technology is sometimes avoided or causes trouble in the media outlet if news producers are older. “I mean, I am 48. Technology sometimes catches me by surprise,” a reporter working for a regional newspaper in the Midwest said.

Also, while the majority of participants had heard of the traditional technologies I referenced in the questionnaires, very few had heard of the emergent technologies listed in the same form, which are currently used in the media: virtual reality and applications that automate the transcription process. “I think that would be great if such a thing existed,” the same reporter said.
Age was also referenced by younger reporters when they tried to explain why some technology solutions adopted by their newsrooms were too simplistic, probably so they could be used by people with very little exposure to technology. For instance, many news producers I interviewed said that newsrooms require them to shoot video and that some even have quotas. Yet, in order for everyone to be able to do it, they use a mobile app that covers only the basic functionalities and is perceived as very limiting by people with more visual experience. “There’s a push for video but it’s very dumbed down,” one reporter working for a large Midwestern newspaper said. “Probably because it’s complicated for people who aren’t used to using phones and apps.”

At the same time, one reporter working for a national newspaper on the East Coast said that, even though he considers himself a data reporter, he doesn’t have a deep understanding of data and needs to work with a data analyst. Another reporter working for a Northwestern newspaper said that he prefers to use simple tools, that are not difficult to learn, so they would allow him to engage in his creativity. This is one of the reasons why he waited to adopt the internet as part of his work.

In the beginning, it was very complicated. In the early stages, you needed to memorize or keep a chart in front of you. If you wanted to write a comma, you do this and this and this. At the beginning, it was too complicated and that’s one reason it was of minor interest to me.

Because these are usually the people who are at risk of losing their jobs because of the push for digital which involves skills they don’t possess, they also seem to be struggling the most to be keeping up. The successful ones are the reporters who are willing to learn from the young people about the platforms and tools they use. One reporter working for a small Midwest newspaper talked about his relationship with change:
You have to be open to change because it's going to happen one way or the other. So I think to have a newsroom that’s going to adopt change you've got to have both veterans that are open to it and you've got to have younger people that are constantly creatively thinking of, you know, how to use technology in new ways.

At the same time, younger reporters tend to believe that, even though older people might express interest in taking part in information sessions and trainings about technology, most of those older journalists avoid using that technology even after they are taught how to use it. One reporter working for a West Coast newspaper said he once had to undergo training for a data visualization software and noticed how people of different ages used that technology after the session.

There were probably more younger people than older people, but there were old people there. But I think that almost none of the old people used it. They were interested, they came, went through the tutorial, and almost none of them used it. Few of us, the younger reporters, used it.

4.5. No early adopters, but walking the extra mile for the audience

The majority of reporters that I interviewed said that the technologies they adopted as part of their work were already rather popular in the industry. Also, there seemed to be a rather uniform way of thinking about what technology is and how it can serve journalists. When asked to name one technology that they adopted as part of their work, most of them said Twitter. They all explained Twitter was a well-known reporting tool when they started using it and also said they saw it was useful for other people in the industry, even their newspaper colleagues. This proved useful for interpreting TRA, which says society’s beliefs and attitudes toward a specific technology influences a person’s intention of using that piece of technology.

At the same time, the majority of people I interviewed said they dislike Snapchat and don’t see the use of it. Most of them said they don’t see it being used
that much in their industry, or it is only used by people fresh out of college.

Also, the majority of the reporters talked about the same two technologies that are currently being used extensively by their newsrooms. One is the Videolicious video app that simplifies the way video is produced. Newsrooms seem to be pushing reporters to use Videolicious in order to generate more video and satisfy the demands of the sales departments that believe video ads are in higher demand right now. The other popular technology is Facebook Live, a way of broadcasting live video through the social media platform (Facebook Live, n.d.). The print reporters I interviewed disliked Facebook Live mainly because their newsrooms are making them go on camera and present their stories. This, they said, goes against their education as print journalists. They lack training about being on camera and they perceive this as being a skill that is specific to broadcast. The people that I interviewed were all print reporters and said they feel very uncomfortable being on camera. Also, they said they feel too exposed on social media.

An interesting fact is that newspaper reporters that I interviewed didn’t seem to be open to technology they didn’t like, even if management told them they should be using it. However, they said they are willing to try out new things if they are requested by their audience. As one reporter working for a regional paper in Missouri said:

Reporters are stubborn and resist authority just impulsively. So there’s only so much management can do. I don’t think it’s up to management. It’s up to readers. You are getting in the field and feeling how people consume news. If I were out there to tomorrow and somebody would say “Hey, I like your stuff. I would like to follow you and you should try to put something on Snapchat”, I guess I freakin’ download the Snapchat app and try to do that.
4.6. Location matters

Throughout my research, I interviewed news producers working for newspapers on the West Coast, South, Midwest, and East Coast, from bigger to smaller newsrooms, from wealthier, to less financially stable. The journalists working in newsrooms on the West Coast said that they were very heavily oriented towards technology, to the point that technology is a big part of their work. A reporter working for a major newspaper in the Bay Area talked about her newsroom’s relationship with technology:

We are more tech savvy just because of where we live. People I work with are on Facebook. There are some people who don’t know how to use Twitter, but that’s more of a rarity. People are pretty tech savvy. I think people are willing to do more video. They are willing to do more data visualization charts or interactive graphics for their stories.

In the Midwest and in the South, reporters referred to their newsroom as technologically open towards the new, but not pushing too hard on reporters to go beyond their comfort zone. A reporter working for a large Midwestern paper, who recently relocated from a newsroom on the West Coast, said:

This is a lot more traditional newsroom. My previous newsroom was obsessed with online news. We had quotas. There was more of a tendency to do click baits. Don’t get me wrong. This one is very aware of wanting page views and reach large audiences just like everyone does, but my job is much more still print-focused and we don’t get pestered about page view nearly as much. I mean not at all.

He also said that, unlike his newsroom on the West Coast, in the Midwest people seem to concentrate on a limited number of tasks. Reporters don’t even have access to online related features, such as being able to edit code or their own stories once they are pasted in the command management system software.

The East Coast reporters I interviewed came from larger newsrooms with
more resources. Reporters I interviewed there were taught to think more about the channel for best reaching their audience, rather than what the reporters prefer to use. Also, they seemed more inclined towards specializing rather than dealing with multiple tasks at once. A reporter working for a national newspaper in Northeast said his newsroom is “incredibly open” towards technology.

But it doesn’t mean that we are open to everybody doing everything. But as an institution, new tech is increasingly seen as a future and there’s a whole move towards reframing how we think about the news product. Not just as a newspaper but about what’s the best way to bring better information to our service, whether online, on phone, and in print. We are first thinking about how that information gets to people.

All in all, news producers I interviewed acknowledged that the way they adopt or reject technology is influenced by a wide variety of factors that are often interconnected. They agreed that newsrooms could put in more effort in understanding technology and how it should best serve news producers; that there is more need for education in terms of technology, as well as time to get acquainted to it; that media companies should struggle to look more toward the inside of the organization rather than follow trends in the industry,
Chapter 5. Conclusions

My results overall helped interpret my theoretical framework. Both the Theory of Reasoned Action and the Technology Acceptance Model guided my research and allowed me to answer my research question: *What factors do non-management newspaper news producers perceive as influencing the adoption or rejection of new technologies by their newsroom?*

The factors my research identified are connected to the components of both TRA and TAM. Non-management news producers believe newspaper newsrooms adopt technology based on preferences and industry practices. The media seems keen on experimenting with new types of technologies, but there are several aspects that they fail to consider. This makes the implementation of these technologies either hard to understand by users or very hard to carry out per se. News producers often complained they are overburdened with tasks because of new technology that newsrooms are forcing onto them just because their peers in the industry are using it, while they admitted they would be interested in trying anything that might get them closer to their readers. If the technology serves them or not, they thought this is mostly related to leadership in the company.

At the individual level, news producers were a perfect example of the concepts illustrated by TRA. They tended to embrace technology as long as they truly believed in the positive outcome of incorporating it in their jobs, and also if their colleagues seemed to have tested it before to confirm that it was indeed useful. Their perception on their newsroom’s behavior was that they too adopt and invest time and money in technology if they anticipate positive results, and that the industry preferences overall
plays an important part in their decision to incorporate a new technology.

My results partially helped interpret TAM, as news producers emphasized on the importance of a technology to be useful. In terms of ease of use, they were willing to compromise and spend time in training if the technology seemed to improve their workflow or help them better reach their audiences.

News producers were more inclined to accept or embrace a technology if whatever decision came from above seemed to be backed up by a comprehensive strategy on how that technology was supposed to improve the quality of their work. At the same time, they tended to reject any technology that was imposed onto them just because it was already adopted by other newsrooms or seemed popular at the time for no clear reason. They believed money played an important part in newsrooms having to adopt or avoid specific technologies, as potential revenue streams are a key indicator that a technology should be used or not. Yet they had little understanding of how purchasing decisions are made in their newsrooms and who needs to approve new technology being acquired. They didn’t reference anything about a cost or potential revenue analysis that is made by their superiors when they suggest them using a new technology, and, overall, gave the impression that the financial aspect is not something that they are familiar with, most likely because they are not involved in any such aspects in their newsrooms. Also, most of these decisions seem to be made at a corporate level, which is sometimes separate from the newsroom.

Reporters were also not keen on any technology that would make them read instructions or spend too much time in training, as they don’t have much time to begin with. One could argue that younger reporters may be more eager to experiment with technology, while the older ones were more skeptical, most likely because they
want to use technology that is proven useful, are less patient, and, all in all, have seen technology wasting their time or failing on them in many situations.

This said, none of the reporters I interviewed showed excitement about using technologies that might not help them put out a product that they consider of good quality. This might have to do with the lack of time or rigid principles that govern this profession.

These results are to be considered by those who build technology for the media and those in charge of incorporating it in the work of news producers. Those building technology should understand that journalists are indeed overburdened with tasks and that they have little time for experimenting with technology. They need tools that have already proven efficient, don’t fail on them, and yield the right results as soon as possible. Journalists believe technology should be reliable and they have little tendency of trying something that doesn’t seem to work that well. They are not keen on spending much time learning a new technology as their deadlines as tight. Ideally, those technologies should be easy to use so they could figure them out themselves without having to undergo training or read instructions. Again, they are indeed willing to compromise if the outcome of using new tools is a positive one and if it helps them better serve their readers.

Those in media management should know that news producers care more about using technologies that are adapted to their needs, than embracing ones that everyone else is using with no clear results. They wish to see a comprehensive strategy behind every implementation of technology and people in charge who understand how that technology is supposed to be functioning in the newsroom.

Although my interview questions didn’t reference a specific type of
technology, the majority of my respondents focused on software technologies. There might be several explanations why my respondents weren’t looking into hardware. One of them might be the fact that “technology” is a term that is usually associated with the new. As it is much harder to implement hardware technologies, also more expensive, this is a type of technology that is less frequently updated in newsrooms. At the same time, the majority of the software technologies that news producers use operates on already existing hardware, such as their computers and laptops or their phones. All of them associated social media with technology. This might have to do with the fact that social media is now both a reporting tool and a distribution tool in the media.

My research was limited by time and resources. News producers have little time to spare for talking with researchers, therefore there was little room for elaborating on many of the topics that could have been covered by the interviews. It could have incorporated a larger amount of people and also longer conversations about how news producers perceive technology not just at their workplace, but in their private lives as well, as personal perception heavily influences the way journalists deal with technology. The research could have included talks with managers and people in charge or purchasing decisions to understand how these decisions are made and what influences them. Also, it could have incorporated talks with technology specialists who could have better explained how a technology can become popular in the media and what is their perception on how to make tools for journalists thrive.

Also, the questionnaires could have incorporated more questions that could better describe news producers’ relationship with technology, such as specific
questions related to hardware or software technology or previous experiences in previous newsrooms, to better understand where they come from.

I also acknowledge that my results might have been influenced by my experience as a journalist and by the fact that I knew some of the people I interviewed. This was a very good thing, as the conversations were more open and relaxed, but I presume my own knowledge about their background might have influenced the conversation in a manner which I might not realize it now. I myself am a reporter and, even though I am technology-oriented, I prefer to use something that is already tested and reliable, so that it would not disrupt my workflow. Therefore, I expected to hear that news producers were bothered by technology which is not fine-tuned to their needs, that interferes with the reporting process rather than help it, and that they prefer to see a clear purpose in this technology, rather than experimenting with it.

Also, I do acknowledge that the fact that I was a student while carrying this research might have made the people whom I didn’t know be more brief with their answers and not as engaged as the other ones. It is also hard to assess how much attention and effort they put into answering my questions.

5.1. Future research

This research can be expanded to take a deeper look at the actual process of adopting technology in newsrooms and can incorporate a variety of media outlets. It can include television stations, magazines, digital media outlets, and comparisons on how different types of media outlets integrate technology. It would also be interesting to do an extensive research on how media professionals consume technology both in
their personal and in their professional lives compared to people from other industries. This research could not be complete without incorporating analyses on how technology is changing the media industry, how technology gets to be used by the media (if it’s technology that is specifically produced for the media or if it is adapted by journalists), how are the trends in the industry born, and how are media managers trained to understand technology.

It would also be interesting to look at adjacent industries, such as the advertising industry that my paper showed influences the management decision in the media, to see how trends are formed there too and how they later adapt to the media industry.

Last, but not least, future research could take into consideration the academic environment in which journalism is still taught. It could analyze how journalism schools teach students about technology, what classes are there available for them to get acquainted with it and learn how to include it in their work. It could analyze professors’ attitude toward technology and how their personal perceptions influence the future of the media industry.
Chapter 6. Recommendations

My research offered me numerous insights into the media industry at the time when I am ready to join the field again. I have gotten the opportunity of interacting with people of various ages and positions in media companies that have depicted not only how they believe their newsrooms deal with technology, but also recommended methods of changing the media corporation for the better.

I believe these results are valuable not just for media managers, but also for those who train both news producers and the management. News organizations should pay more attention to how people actually use technology that they push onto them. Many of these technologies that management acquires are either not popular in their newsrooms or not even used. Technology should be incorporated after performing research on how it could fit the media organization or what purpose it should serve, as many of the purchases that are made now seem to consist of redundant solutions.

Management should make sure the technology is tested and maybe engage an R&D department in the whole process to make sure the new technology is appropriate. At the same time, it would help if management would understand the particular needs of their organization, without letting themselves be carried away by trends in the industry, which might not match their organizations’ needs. It would be good for those in charge to consider the limitations that the journalistic work imposes on learning to use a new technology that might be sophisticated. They should also consider if the audience is indeed interested in seeing the media outlet engage in a new type of technology. At the same time, if there is a need for employees to go through the process of learning and using a new technology, management should
somehow prove that that particular technology will boost revenue, as most employees believe there is no financial strategy behind these decisions either.

Also, media management should consider the level of skills their employees possess, as many seem too qualified to be satisfied with using simplistic limiting tools that generate frustration. This point is closely connected to journalistic education. I believe journalism schools should better look at what the industry wants and at what level. Most of these schools aim at training future generations of journalists by very high standards and at a high level, which sounds good on paper and for academic prestige. Yet, in reality, job descriptions that call for applicants possessing a variety of digital skills mostly refer to people having a basic understanding of how to use very simple tools that often times produce low quality content. Thus, a professional fresh out of school who tries to produce high-end journalistic products with limiting tools will face severe frustration and lose work motivation very easily.

All in all, both academia and the media should come together not just for the purpose of research, but for trying to accommodate two fields that should very much work together, yet seem to be operating separately at the time. Management and news producers should benefit from better training ever since their school years, and academia should put more effort into understanding the realities in the industry. It is only then that newsrooms will be operated in such way as to accommodate both the professional standards and the newest tools that could boost reach and efficiency in journalism.
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