Job Market Paper

WHEN AND HOW MIDDLE-STATUS NEWSPAPERS INNOVATE:
THE ROLE OF STATUS AND MARKET IDENTITY IN ADOPTION OF DIGITAL MEDIA

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ABSTRACT

This study focuses on the role of status and market identity in the diffusion of a discontinuous technology and asks specifically how status and market identity affect the adoption motivation and implementation process of the discontinuous technology in the U.S. newspaper industry. I argue that middle-status organizations perceive the new technology as an opportunity for gain whereas high-status organizations as a threat of loss because of different market identities imposed on them. As a result, middle-status newspapers are more likely to be the first to experiment with the new technology and to develop websites that emphasize that digital media is different from print media. High-status newspapers have fewer incentives to take the risk of adopting the new technology, but follow the first-middle-status newspapers quickly if their experiments look promising. When high-status newspapers develop websites, they also try to emphasize that digital media is not very different from print media. Event-history analyses and negative binomial regression analyses of the newspaper industry from 1993 to 2007 support my theoretical argument: Middle-status newspapers indeed launched their websites earlier than other newspapers and were more likely to emphasize the interactive features on the web, the most distinctive characteristic of digital media from the traditional print media.

Discontinuous technologies refer to significant breaks in technological variation from the previous dominant technologies or designs (Dosi 1982; Christensen and Rosenbloom 1995) and the diffusion of discontinuous technologies is a central research area in strategy and organizational theory (Schumpeter 1934, 1942; Abernathy and Utterback 1978; Tushman and Anderson 1986). Previous literature in this field focuses on explaining the success of discontinuous technologies and the overall evolution of innovations (Schumpeter 1942; Rogers 2003; Wejnert 2002). Specifically, many studies on the diffusion of discontinuous technologies examine why incumbent firms often fail to adopt the new technologies in terms of economical, behavioral, or capability explanations (Reinganum 1982; Rosen 1991; Leonard-Barton 1992; Henderson and Clark1990). According to this line of research, entrepreneurial firms are more likely to initiate discontinuous technologies because they have more adaptable or flexible organizational structures (Schumpeter 1934; Abernathy and Utterback 1978). Although paid less attention in previous literature, incumbent firms react, sometimes even actively, to discontinuous technologies (Methe, Swaminathan, and Mitchell 1996). More importantly, by actively reacting to discontinuous technologies, incumbent firms may also interpret the technologies differently and attempt to shape the new technologies in a way that is beneficial to themselves (Fenton 2010), raising the questions of why and how incumbent firms respond to discontinuous technologies.

I focus in this paper on how status positions, which incumbent firms occupy in markets, affect their perceptions and interpretations of the same technology in order to examine why and how incumbent firms react differently to discontinuous technologies. I approach discontinuous technologies from the social construction perspective because discontinuous technologies often are also socially constructed through interactions among organizations, especially, during

diffusion processes (Berger and Luckmann 1966; Bijker, Hughes, and Pinch 1987). When considering different organizations in the diffusion process of discontinuous technologies, their locations within a social system become important, because their locations shape their relationships to the technology in question as "it is [the] structural location that largely determines the relationship to each technology with [which] they conceive or which confronts them" (Russell 1986:335). The locations that actors occupy within the social system are commonly referred to as their statuses in that social system (Linton 1936; Merton 1957; Jensen, Kim, and Kim 2010). Therefore, the status of an organization is of importance in understanding why and how incumbent firms react differently to the same discontinuous technology. In this paper, I theorize the role of status in the diffusion of discontinuous technologies and ask why and how organizations adopt and implement discontinuous technologies differently, depending on their status levels.

Previous literature on the role of status in diffusion processes emphasizes that middle-status organizations often are reluctant to be different from others because they face the strongest conformity pressures, whereas high- or low-status organizations are willing to participate in diffusion processes (Menzel 1960; Dittes and Kelley 1956; Phillips and Zuckerman 2001). The conformity pressures faced by middle-status organizations, however, conflict with their economical and social motivations to increase their business opportunities (Kennedy and Fiss 2009) and this conflict suggests that middle-status organizations may actively seek new business opportunities when they can do so without violating conformity pressures. I argue that discontinuous technologies relax these conformity pressures on middle-status organizations, and middle-status firms may attempt to change their current 'disadvantageous' condition by adopting discontinuous technologies first. They also implement the new technologies differently from the

previous market in order to construct them in a distinct way. In contrast, high-status organizations have fewer incentives to take the risk of adopting a new technology first, but they follow the first movers quickly once the experiments look promising. This 'wait and see' strategy helps high-status organizations avoid the uncertainty related to discontinuous technologies. Moreover, they tend to highlight the similar aspect of the new technology in implementation, which ultimately can shape a potentially discontinuous technology as a more continuous one.

I test my theoretical arguments in the empirical context of print-based newspapers' adoptions of a discontinuous technology, digital media. Digital media, an electronic edition of newspapers on the web, is regarded as discontinuous from print media (Gilbert 2005; 2006). Digital media has very different characteristics from print media and how newsroom practices related to digital media differ from those found in traditional media has been well-theorized (Foust 2009; Gilbert 2005; Peng, Tham, and Xiaoming 1999). Digital media enables newspaper readers to access most-updated news immediately (immediacy). There exists no spatial limitation on the web (limitless space) and overall set-up and maintenance costs are relatively low (low cost). Newspapers also provide not only text-based news, but also sound-, animation-, and video-based news on the web (multimedia usage). Most distinctively, digital media allows readers to actively take part in the story-telling process (interactivity). However, in contrast to the view that newspapers on the web would be different from newspapers in print, there exist substantive variations, not only in points in time when newspapers adopted the new technology, but also in ways of publishing news on the web (Boczkowski 2005). I argue that these variations are caused by different adoption motivations of newspapers with different status levels: middle-status actors

want digital media to have a distinct meaning from print media, whereas high-status newspapers

seek to establish 'print-media-like' digital media.

The paper is organized as follows. First, I theorize the effects of status on the adoption

motivation of the discontinuous technology and examine how it affects adoption timing of the

new technology and the consequent implementation. I hypothesize that middle-status newspapers

are more likely to launch their website first and to emphasize a distinct characteristic of the new

digital media, interactivity, on their websites. Third, I describe my empirical setting (U.S. daily

newspaper industry from 1993 to 2007), empirical variables, and statistical analyses, followed by

a presentation of the findings. Finally, I conclude by discussing the contributions and the

limitations of my study.

STATUS AND DISCONTINUOUS TECHNOLOGY

Market as Social System and Status

In order to understand how status affects the adoption motivations of the same

discontinuous technology, it is necessary to discuss markets as social structures and how they

function in a stable environment. White (1981b: 517) suggested that markets should be

understood as "social structures among specific cliques of firms … who evolve roles from

observations of each other's behavior [in the same clique]" and, as a result, firms tend to be

casted into "distinct and ordered niches" (Leifer 1985: 443). In other words, organizations in

markets are sorted into different social positions based on perceived quality (White 1981a) and

tend to have different roles and market niches granted to each position (White 1981a, 1981b;

Leifer 1985). For example, a clique of brand medication companies and another group of generic

drug manufacturers occupy different market niches and are granted different roles –the former as

innovators and the latter as followers (Oster 2000). Similarly, the roles and market niches of

mass-production brewing companies and small specialty brewers in the U.S. beer brewing

industry are clearly distinguishable and the roles and market niche granted to each group are not

easily penetrated by the other group (Carroll and Swaminathan 2000). This image of markets is

tightly associated with literature on the role of status in markets, which mainly focuses on the

ordered positions in markets by perceived quality.

The status of an organization is defined as its (ranked) position in a social system (Linton

1936; Merton 1957; Gould 2002), which can be simplified as the intersection of horizontal and

vertical dimensions of the social system as shown in Figure 1 (Sorokin 1959; Blau 1977; Jensen

et al. 2010). The horizontal dimension of the system provides nominal distinctions of

organizations and the vertical dimension arrays organizations based on a ranking within the

horizontal category. In the auto manufacturing industry, for example, there are also several

product categories, such as, passenger-cars, trucks, or minivans and these auto-manufacturers are

ranked within their own category based on their perceived quality on different product attributes,

which are context-specific: some attributes are unique to a particular product category, such as

load factor for trucks, whereas others are common to various product categories such as

reliability and safety (Jensen, Kim, and Kim 2011). However, in many cases, the criterion of a

ranking can be operationalized by a simple measure, such as market share in the investment

banking industry (Jensen 2003). Another example is the U.S. print-newspaper industry. For

newspapers, winning a journalism award is "a once-in-a-career rarity," whereas for a few, "it is

commonplace" (Alexander 2010) and the cumulative number of journalism awards, especially,

that of Pulitzer Prizes (which will be discussed in the method section in greater detail), can be used as a vertical dimension to define the position of a high- or low-status newspaper, as shown in Figure 1.

The status of the organization is important because the structural position influences its activities. The market identity of the organization refers to the categorical or schematic representations of its status or its position in the social system (Jensen and Kim 2008). As cognitive interfaces between firms and external audiences, market identity coordinates and controls the activities of identity carriers and shapes the expectations of external audiences (Hannan, Pólos, and Carroll 2007; March 1994). Distinctive activities from different-status organizations are expected because different market roles are expected from the focal firms. For example, high-status newspapers, occupying the intersection of print-media (horizontal dimension) and winning many awards (vertical dimension), are expected to present integrity, fairness, balance, accuracy, and comprehensiveness, that is, quality journalism (high-status market identity), whereas newspaper readers hardly expect quality journalism from low-status newspapers (Jones 2009). Market identity stems from both product categories and the same vertical positions across different product categories. For example, newspapers share some characteristics, such as publishing articles regularly, but, good journalism, no matter whether it is a newspaper or television station also shares some characteristics across different product categories that are not shared within the product category across vertical positions. It is the intersection of these two dimensions that determines audiences' expectations, which is the identity of the focal firm.

Two aspects of status and identity are important to note before presenting my theoretical arguments. First, quality is one aspect of status as status functions as a signal of quality (Podolny

2005; Jensen et al. 2010). By occupying a particular position in a market, a firm is expected to produce a product of a particular quality as positions are constructed by perceived quality: high-status auto manufacturers are expected to produce high-quality. However, it does not necessarily indicate that high-status auto firms always present good-quality cars and low-status firms cannot do so: there exists a loose positive relationship between status and quality, even if two concepts are theoretically different. Therefore, firms in the market are ordered not by objective quality, but by quality expectations, which are consistent with what White (1981a) mentioned as perceived quality in his market model. Second, among several advantages of occupying a high-status position (see Jensen et al. 2010 for review), high-status organizations receive greater attention for a given-task performance (Merton 1968). This disproportional attention to high-status firms, that is, their visibility, also indicates that external audiences tend to form and reinforce the overall expectations of firms in the market (of a particular product category) disproportionally based on the activities of high-status organizations (Lakoff 1987; Murphy 2004). Although newspaper-readers are aware of yellow journalism[1] and sometimes enjoy reading it, they, for example, generally expect a newspaper to publish objective news, the journalistic aim of elite newspapers (Schudson 1978).

Status and Business Opportunities

The image of markets as social structures ordered by perceived quality leads to new insights about how firms respond to new business opportunities depending on their status levels. It has been well-documented that firms adopt an innovation if it improves their internal

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[1] Yellow journalism indicates a type of journalism which merely focuses on financial profitability (Campbell 2003; Jones 2009). The yellow press cares less about journalist objectivity if it can sell more newspapers.

functioning or if it maintains or increases their legitimacy (Tolbert and Zucker 1983). First-movers are not the exceptions; they also care about both economical and social gains of the new innovations (Kennedy and Fiss 2009; Rogers 2003), which are closely linked to previous literature on the effects of status on the diffusion of innovations. It has been identified that either high- or low-status firms can be the first movers as high-status organizations often originate the diffusion of normative innovations, whereas low-status actors tend to initiate counter-normative innovations (Menzel 1960; Phillips and Zuckerman 2001; Rogers 2003). This finding can be restated that when considering a new business opportunity, high-status firms are concerned about both economical benefits and their social acceptability of the new opportunities, because audiences pay much attention to their activities as the visibility of their positions indicates and high-status firms hardly want to undermine the social system from which their current positional advantages stem. In contrast, low-status organizations mainly focus on potential economical benefits of the new opportunities and if any practice, even an illegitimate one, has a potential, low-status actors tend to adopt it, because audiences care less about their activities and low-status firms have little to lose.

According to this line of research, middle-status organizations are unlikely to be the first to adopt any new innovation. Middle-status firms face the strongest conformity pressures not to deviate from the overall expectations and norms of firms in the market (Blau 1960; Dittes and Kelly 1956; Phillips and Zuckerman 2001), which prevent them from initiating any innovations. Firms need to meet the overall expectations of firms in the market in order to claim a membership in the market as "any candidate who wishes to gain recognition as a player will feel pressure to conform to audience expectations concerning such an action" (Phillips and Zuckerman 2001: 385). As indicated earlier, the overall expectations of firms in the market tend

to be established around the activities of high-status organizations because of their visibility, but, high-status organizations have a secure membership in the market because of their representativeness of that market. Although low-status organizations cannot perfectly follow the overall expectations of firms in the market, audiences care little about their activities anyway, because of their low-status positions. In contrast, middle-status organizations need to follow the expectations and norms most strictly in order to claim the membership in the market. Therefore, even if middle-status organizations have economical and social need to look for new business opportunities as any other firms, they are unlikely to be the first to do so in the stable environment since they confront the strongest pressures to conform to the overall expectations of firms in the market.

Discontinuous Technology and New Opportunity for Middle-Status Firms

A discontinuous technology opens up new business opportunities, especially, for middle-status organizations. The basic assumption of the conformity pressures is that audiences have fully-established expectations of firms in the market in question: newspaper readers, for example, expect a print newspaper to report national, international, local or other news in print with a certain layout from an objective perspective (Jones 2009). However, the discontinuous technology draws on a fundamentally new set of knowledge and routines from the current knowledge base or routines (Tushman and Anderson 1986), which means that the new technology is not only novel to the organizations in action, but also to the audiences. Therefore, audiences have not fully established what to expect from the new discontinuous technology and also from the group of organizations who adopt this new technology (Ansari, Fiss, and Zajac 2010). When digital media was first introduced, for example, readers did not fully agree on what

to expect from this novel medium and organizations in this field (Li 2006; Pavlik 1997). Some wanted on-demand or customized news, some expected online media to provide multimedia news, some looked forward to actively interacting with others through this new medium, and yet others may not have had any expectations at all, which is why newspapers' going online was described as "an adventure" (Pavlik 1997: 30). Therefore, in the new field created by the discontinuous technology, conformity pressures have not been put into effect yet.

Nascent conformity pressures with respect to the new technology affect the adoption motivation of organizations with different-status levels. For middle-status organizations that face the strongest conformity pressures, but simultaneously feel a strong need for looking for more business opportunities, the discontinuous technology is a viable opportunity for them to increase their business opportunities without directly confronting conformity pressures. Therefore, middle-status organizations perceive the new technology as an opportunity to gain and will actively search for such opportunities. Although high-status firms often have abundant resources to adopt the discontinuous technology most effectively because of positional advantages, they have fewer incentives to take the risk of adopting a not-yet fully legitimate technology. More importantly, they may perceive this new technology as a potential threat of losing their current advantageous social positions as the discontinuous technology can inherently change the current social system. Lastly, low-status firms may have freedom to act differently from conformity pressures, but they feel a weaker need for adopting it because the new technology indicates that its economical benefits are also uncertain. Therefore, the perception of the same technology differs depending on status. Specifically, the difference between middle- and high-status organizations is the most noticeable: middle-status organizations perceive the new technology as

an opportunity for gain whereas high-status organizations as a threat of loss because of different market identities imposed on them (Kennedy and Fiss 2009; Gilbert 2005).

Different adoption motivations to the same discontinuous technology can explain why print-based newspapers adopted a discontinuous technology, digital media, at different time points. Middle-status newspapers strive to open up new business opportunities by being the first to experiment with the new technology. Through this fast adoption, they can increase business opportunities without directly confronting any conformity pressures. Therefore, middle-status newspapers are most likely to launch their websites first. In contrast, high-status newspapers cautiously observe the attempts of the middle-status newspapers before investing their time and resources into digital media (Conner 1986). When other newspapers' endeavors look promising, that is, threatening to their high-status positions, but not having fully achieved potential as yet, high-status newspapers may launch their websites to catch up with the first movers. They have abundant resources gained from their high-status positions in the previous market (Podolny 2005), enabling them to quickly catch up with the first-middle-status firms. Lastly, low-status newspapers may confront a weaker need to adopt new technologies and change the current conditions than middle-status newspapers because discontinuous technologies do not immediately change their business conditions (Gilbert 2003) and firms also tend to continue their current activities in the current market niche if performance does not change dramatically (Cyert and March 1963; Simon 1957).

In sum, in the diffusion of the discontinuous technology, digital media, middle-status newspapers are likely to be the first to adopt the new technology whereas high-status organizations are the early-imitators, which leads to my first hypothesis:

> *H1: Middle-status newspapers are likely to launch their websites earlier than high- and low-status newspapers.*

Status and Implementation of Discontinuous Technology

Different perceptions towards the same technology also affect organizations' choices with regard to the various ways of implementation. Although some practices, such as, executive incentive plans, can be implemented without significant modification, diffusing practices can vary in form (Bijker et al. 1987; Westphal et al. 1997). Specifically, since many innovations, especially, discontinuous technologies, are multi-faceted and have the potential to be interpreted differently, variation in implementation exists. Organizations can, for example, focus on various dimensions of identical technologies. Hughes examined electronic power systems from 1880 to 1920, in various counties, and found "variations in resources, traditions, political arrangements, and economic practices from one society to another and from one time to another" (1983:2). When adopting total quality management practices (TQM), U.S. hospitals could also choose one of the standard TQM approaches which focused on different aspects of TQM programs (Westphal et al. 1997). For example, one approach emphasized the training process, whereas another approach concentrated on process heuristics. Organizations could even customize these approaches, or develop their own approach if none of the standardized approaches suited their need. Therefore, how to define a new technology and its main dimensions remain open to interpretation even with the *ex ante* identification of several dimensions of the new technology.

The variation in the form itself or implementation and the uncertainty about institutional standards increase organizational discretion in responding to discontinuous technologies (Goodrick and Salancik 1996; Purdy and Gray 2009; Ansari et al. 2010). Organizations can

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choose not to follow a prototypical practice (if it exists) and concentrate on a specific dimension of the new technology, which fulfills their need the most, as "the characteristics of diffusing practices interact with the characteristics of adopters" (Ansari et al. 2010:73). For example, it has been well-documented, since digital media's inception, that new digital media had the distinct aforementioned characteristics, such as interactivity, immediacy, multimedia usage, limitless space, and low cost (Gilbert 2005, 2006; Foust 2009; Peng et al. 1999). However, since there had been no industry-wide dominant form of digital media, each newspaper exerted its discretion and chose to focus on certain dimensions of the new technology. It then developed its own form of web sites. In other words, one newspaper company could interpret that interactive features should be the most important consideration in digital media implementation, whereas another print-media company might concentrate on producing multimedia news on its website. This variation in implementation links to my theoretical argument, which will be presented in detail below that status positions of organization affect choices among the emphases on different dimensions of discontinuous technologies in implementation process.

As discussed above, middle-status firms perceive the discontinuous technology as an opportunity to differentiate themselves without directly confronting conformity pressures whereas high-status firms perceive this new technology as a threat to lose their status-based advantages from the current market. It is, therefore, more beneficial for middle-status organizations to emphasize the novel aspect of the new technology and to implement the new technology in a very different way from the current market. Through this new interpretation, middle-status organizations can be relatively free from conformity pressures in the current market and can take the advantage of the new technology first, if such an advantage actually exists. In contrast, it is more advantageous for high-status organizations to interpret the new

technology as an incrementally developed one and implement the new technology in a way as similarly as possible to the current market to easily transfer their high-status advantages to the new market. Status has a positive effect on transferability across different markets when the market logics of a targeted market are similar to those of the market from which entrants come (Podolny and Scott Morton 1999; Jensen 2003). Therefore, middle-status firms strive to segregate the current market and the new field created by the discontinuous technology as much as possible whereas high-status organizations seek to blur the potential boundary between the two (Hannan and Freeman 1989).

Different emphases on various aspects of the discontinuous technology in implementation, in effect, are associated with the incumbent's efforts to shape the new technology in a way that is beneficial to themselves (Bijker et al. 1987; Hughes 1983). Specifically, the social construction of technologies (henceforth, SCOT) perspective regards technologies as social objects, instead of technical objects, and concentrates on the social construction process of these objects through interactions among participants (Berger and Luckmann 1966; Bijker et al. 1987). Discontinuous technologies are also socially constructed through social interactions, especially during diffusion processes because any discontinuous technology involves uncertainty when it is first introduced (Anderson and Tushman 1990; MacKenzi 1996). As a new set of knowledge and routines, different social groups can interpret discontinuous technologies in different ways, based on their own past technologies and experiences, which opens up the possibilities of discontinuous technologies' being shaped in various ways. In an extreme case, the new technology could have been regarded as a discontinuous one, *ex ante*, but it can turn out to be continuous, *ex post,* because of incumbent firms' active intervention. According to my arguments, middle-status firms try to construct the meaning of the new technology differently from the current dominant

technology, which means that they emphasize the discontinuity of the new technology. In contrast, by highlighting the similar aspect of the new technology, high-status organizations strive to shape a potentially discontinuous one as a more continuous one.

The different adoption motivation logic may be applied to the print-media industry when the industry confronted a discontinuous technology, digital media. The new technology was not just another delivery system on the web: merely launching a website does not mean digital media. Reporters need to acquire a new set of multimedia skills and get used to updating the news every second (Boczkowski 2005). Most importantly, among distinct dimensions of digital media, the interactive aspect of it was the most challenging part to print-based newspapers. Since the inception, newspapers had been news-producers whereas readers are consumers: indeed, newspapers "institute a structured break between the production of symbolic forms and their reception… the capacity of recipients to intervene in or contribute to the process of production is strictly circumscribed" (Thompson 1995: 29). However, interactivity means that the previously passive recipients can be news-creators as well. Therefore, developing an interactive website would be implementing the new technology in a completely different way from what used to be done in the print media industry. Previous studies in digital media have identified that there existed a variation newspapers adopting the new technology in terms of interactivity (Boczkowski 2004); therefore, I focus on this dimension and argue that middle-status newspapers, facing the strongest conformity pressures in the current print-newspaper industry, mostly focus on the interactivity, which leads to my second hypothesis.

> H2: Middle-status newspapers are the most likely to develop websites with interactive features.

METHOD

Daily Newspaper in the United States

The empirical setting is the U.S. daily newspapers industry. Newspapers date back to the early sixteenth century when papers containing news and information began to be published regularly in Europe (Picard and Brody 1997). Newspapers were introduced to the U.S. in the late sixteenth century and were first used as personal communication vehicles for social and political purposes of the elites. With the introduction of new technologies, such as improvements in press, newspapers started to reach broad audiences and two types of journalism –'journalism as entertainment' and 'journalism as information'—become prevalent, especially, since the late nineteenth century (Schudson 1978: 88). Journalism as entertainment focuses on telling stories in order to reach broader audiences, at many times, based on sensationalism. In contrast, journalism as information concentrates on reporting fair and objective information and helped in establishing the newspaper objectivity standard of modern U.S. journalism. Moreover, the difference in perceived quality between two models has been pervasive as the *New York Times*, a representative of journalism as information, has become "a badge of respectability" (Schudson 1978: 117). However, journalism as entertainment still exists even now because most daily newspapers in the U.S. economically depend on circulation and advertising revenues (Picard and Brody 1997): newspapers need to attract broader audiences for both sources of revenues and one of the easiest ways is writing a story that can entertain readers (Schudson 1978; Jones 2009).

Although there have been several technological innovations in the newspaper industry, newspaper practices and the stratification of the market based on journalism as information and journalism as entertainment have not changed much since the nineteenth century (Pavlik 2008; Fenton 2010). However, the U.S. newspaper industry has been undergoing a dramatic transformation since the emergence of digital media, an electronic edition of newspapers on the

web. Introduced by the World Wide Web in 1993, digital media has been quickly diffused to most newspapers in the U.S. (Dotinga 1999). The *News and Observer* in North Carolina and the *San Jose Mercury News* in California were among the first to launch their own websites and other prestigious newspapers, such as the *New York Times* and the *Washington Post*, soon followed this trend. As mentioned above, digital publishing is discontinuous from print publishing as digital media has very different characteristics from print media (Boczkowski 2005; Gilbert 2005, 2006). Digital media is not only a new way of delivering news, but it also changes overall newsroom practices and markets, including both advertisers and newspaper readers (Gilbert 2005, 2006; Foust 2009; Peng et al. 1999). Furthermore, it has been speculated that the three-hundred-year-old market stratification of journalism as information and journalism as entertainment may change toward the favor of journalism as entertainment because digital media is better-fit to quick and light news (Jones 2009).

Sample

My sample includes 205 daily print-newspapers in the U.S. from 1993 to 2007. Online-only newspapers are excluded from the study because I am interested in the adoption behaviors of incumbents with respect to the new discontinuous technology, digital media. There were 1,556 daily newspapers in the U.S. in 1993 and the number continued to fall to reach 1,422 in 2007 (PEJ [Project for Excellence in Journalism] 2010). However, most daily newspapers are small local newspapers with circulations of less than 25,000 and mainly focus on local reporting (Mogel 2000; Picard and Brody 1997). In order to obtain a comprehensive sample of the U.S. daily newspapers, which have similar journalistic ambition or formats and reach broader audiences, I sampled all the newspapers that were ever nominated or awarded by the Pulitzer

Prize in journalism, the most prestigious award for achievements in newspaper journalism since 1917 and the top 100 largest newspapers by circulations from 1993 to 2006, producing a base sample of 205 print newspapers. As Bogart (2004: 45) stated, "on the national level, the most prestigious awards are unquestionably the Pulitzer prizes" and there are some empirical examples that the Pulitzer Prize awardees or nominees tend to be similar in terms of reporting practices compared to non-awardees (Hansen 1990). Furthermore, I also included large newspapers into my sample, because large newspapers also show similarity in their newsroom practices (Mogel 2000; Picard and Brody 1997).

I focus on the period from 1993, the year when the first newspaper in my sample launched its website to 2003, the last year when the last newspaper in the sample launched its website, to examine when each newspaper adopted the new technology. However, it took several years for digital media to become a significant player in the market. In the early stage, readers were reluctant to change their daily cultural consumption (Chan and Goldthorpe 2007) and newspapers, in many cases, used websites to provide simple contact information (Li 2006). Newspapers started to actively use their websites around 2000 and previous studies show that there existed a significant variation in the form of news on the web (Boczkowski 2005). Therefore, I concentrate on the period of 2001 to 2007 to examine the second hypothesis, the effect of status on variation in website components. To test the first hypothesis of the website launch timing, the *Editor and Publisher International Yearbook*, a U.S. daily newspaper directory published annually, was used to obtain the website launch date. The *Yearbook* provides the website address of each newspaper if it has one, enabling access to the website launch date

on a yearly basis.[2] I obtained the website launch date of 195 newspapers. To test the second

hypothesis of the website content, I examined the web pages of the sampled newspaper

companies from 2001 to 2007 that were derived from the Internet Archive, a website containing

the archived Web pages, including those of the U.S. daily newspapers. Front-page websites of

the newspapers per quarter for each of the seven years specified from 2001 to 2007 were

collected and 162 newspapers among the sample were available for the current study. The final

sample included 1086 observations (firm-years) of 162 newspapers.

Dependent Variables and Independent Variable

The dependent variables are the year in which a newspaper adopted the discontinuous

technology, the Internet, and the index of interactivity (*Interactivity*). For the website launch

analyses, the year in which a newspaper company first launched its website was coded as a "1";

the variable was coded as "0" until such an adoption had been made. Newspapers that launched

their websites in a given year were dropped from the analyses in subsequent years. For the

website content analyses, the interactivity variable was measured by applying a coding schemata

to a front-page website of a newspaper (refer to Appendix A). The index was created based on

several studies (Lowrey 2003; Zeng and Li 2006; McMillan 1998; Kiernan and Levy 1999).

However, I emphasized the visibility of the items from the front page since I only focused on

front pages (homepages) while other subsequent pages were excluded from the current study.

Newspaper front-pages contain the most important information and most attractive elements

(Foust 2009); therefore, a front page is an appropriate unit to measure the company's strategic

emphasis on different dimensions of digital media. I collected the front-pages of every

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[2] I derived more detailed information about the website launch date on a monthly basis from the NewsBank database, which contains archived articles for about 200 newspapers since 1993.

newspaper in my sample per quarter from 2001 to 2007 (four front pages per year) and summed

the components contributing to interactivity to obtain the index of interactivity. The interactivity

index score had a total of 40 points (10 points for one front page) and a higher interactivity index

indicates a more interactive website. I also measure the index of multimedia usage (*Multimedia*

Usage) to compare the results with that of interactivity. Multimedia usage is another important

new aspect of digital media (Boczkowski 2004). Newspapers, which used to report text-only

news, can report sound-, animation-, or video-based news on the web. However, unlike

interactivity, multimedia usage is not the most distinctive feature of digital media since television

and radio have provided this kind of news. Hence, I predict that there is no relationship between

status and multimedia usage and the index of multimedia usage is measured similarly as that of

interactivity (refer to Appendix A).

The main independent variable is the cumulative number of the Pulitzer Prizes a

newspaper has ever been awarded. The Pulitzer Prize in journalism has been an annual award for

achievements in U.S. text-based journalism and has been regarded as the highest honor a

newspaper can receive (Harris 2007). Winning the Pulitzer Prizes is an indicator of how the

quality is evaluated by external audiences (in this case, colleagues), and is not a direct indicator

of quality (Bogart 2004), therefore, it can be an appropriate measure of status. Specifically, the

cumulative number of awards, not the number of awards in a particular period of time is a

relatively direct measure of the status level for several reasons. First, award-winning newspapers

are not affected by the defections of the reporters of the winning articles because entries and

awardees are newspapers. Second, newspapers, in general, introduce themselves with the total

number of awards regardless of the achievement date. Finally, external audiences treat award-

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wining newspapers qualitatively differently from non-awardees.[3] There are 132 daily

newspapers, among currently operating daily newspapers in the U.S., which have won the

Pulitzer Prize at least once. As of 2007, the *New York Times* had been awarded the Pulitzer Prize

87 times, which is three times higher than the number of awards received by the second and third

largest companies, the *Washington Post* and the *Los Angeles Times*. I took the natural logarithm

of the cumulative number of the Pulitzer awards because of its decreasing effect of size and the

skewed distribution (*Pulitzer [ln]*).

Control Variables: Website Launch Analyses

I use a number of control variables to control for alternative explanations for the website

launch hypothesis. At the online news production level, I controlled whether a newspaper used

other alternative delivery methods to the Internet. Some newspapers chose to have an text-based

electronic presence with a major national online service, such as America Online, Prodigy, or

Compuserve (*Online Service*). Based on the data provided by the *Editor and Publisher*

International Yearbook, I coded the variable as a "1" if the company provided an electronic

service with an online service provider. Audiotex, a voice information system over a telephone,

was also commonly used by many newspapers to deliver their news in a different way from the

print method. Therefore, I coded a dummy variable to indicate whether a newspaper operates an

audiotex service (*Audiotex*).

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[3] The Audit Bureau of Circulation (ABC), the most credible U.S. circulation-auditing
organization, for example, typically does not report the circulation data of small newspapers
having a circulation of fewer than 10,000. However, small Pulitzer-winning newspapers, such as
the Emporia Gazette in Kansas, which won the Prize in the early 20s, are still covered by the
ABC.

At the newspaper company level, previous literature has identified that newspaper size affects newspaper operation, including new technology adoption and implementation (Schultz 1999; Chan-Olmsted and Park 2000; Zeng and Li 2006). Although digital media is characterized with low set-up and maintenance costs, small newspapers may still have insufficient resources to launch their own websites. Therefore, I measured the size of a newspaper company by the natural logarithm of the annual average circulation of the newspaper (*Average Circulation [ln]*). Because daily newspapers can be published in the morning, in the evening, on Saturday, on Sunday or any combination of these, average daily circulation is calculated as a way to measure its reach using a uniform method (Meyer 2004).

$$\text{Average Circulation} = \frac{(\text{Morning or Evening} \times 5) + \text{Saturday} + \text{Sunday}}{7}$$

Furthermore, I control for firm performance because financially constrained newspapers may be reluctant (or more willing) to adopt the new technology. Ironically, average circulation, which I used for controlling for firm size, is the most commonly used indicator of performance in communication studies, because it is audited and publically available (Bogart 2004; Meyer 2004). It is difficult to get profit data of newspapers, in general. For example, 40 percent of the newspapers in my sample are members of publically traded parent companies, but, these media companies usually do not provide the newspaper-level financial data. In addition, maximizing circulation is not always the goal of newspapers since some newspapers sacrifice financial profits to follow their journalistic ambition (Meyer 2004). As an alternative measure of performance, change in circulation (mostly declines recently) was used as an indicator of performance (Meyer and Kim 2003). The ability to increase circulation or minimize the decline in circulation may relate to firm performance. Therefore, I controlled for financial performance of the previous year, defined by the change in average circulation divided by the previous year

average circulation (*Average Circulation Change*). The regional scope of coverage is considered

as another important factor influencing the adoption behavior (Zeng and Li 2006), thus I created

a dummy variable, which was coded as a "1" if a newspaper was published for nationwide

distribution (*National Newspaper*). There are four national newspapers in the sample, the

Christian Science Monitor, the *Investor's Business Daily*, *USA Today*, and the *Wall Street*

Journal according to the categorization of the *Editor and Publisher International Yearbook*. I

also controlled for two Spanish newspapers: *La Opinión* and *El Nuevo Herald* (*Spanish*

Newspaper).

Finally, the broader environment in which a newspaper is located may affect its tendency

to adopt the new technology differently. First, I controlled for parent companies of newspapers

because some of them are renowned or notorious for adopting a new technology (*Knight Ridder*,

Hearst Corporation, *Landmark Communications* and *Gannett Company*). For example, the

Hearst Corporation, a parent company of the *Houston Chronicle*, or Knight-Ridder Newspapers,

a parent company of the *Miami Herald* or the *San Jose Mercury News*, had actively participated

in developing electronic publishing methods such as videotex (Boczkowski 2005). In order to

capture the audience's readiness to adopt the new technology, I also measured the proportion of

high-level education in a given county where a newspaper is located. The proportion denotes the

population with a bachelor's degree or more in a given county (*County High Education Rate*),

which is believed to roughly capture the Internet penetration rate in the county (Yi 2008). The

annual county-level data was used from the U.S. Census Bureau from 1990 and 2000 and

matched to the newspaper that primarily represents the county. I also measured a variable of the

number of other competitors in the same county that have launched websites (*County Competitor*

Adoption).

Control Variables: Website Content Analyses

Similarly to the website launch analyses, I use a number of different control variables to control for alternative explanations for the website content analyses. At the online news production level, newspapers first need a different set of skills from the previous print media industry in order to operate interactive features. Therefore, their experience on the web and the strength of the technical staff could also affect their tendency to employ interactive features (Zeng and Li 2006). Based on the website launch date data obtained from the *Editor and Publisher International Yearbook* and the NewsBank database, the length of web presence on a yearly basis was calculated (*Web Presence Length*). To capture the strength of the online staff, organizational information of whether a newspaper has an online-committed division and the number of managerial roles under this division provided by the *Yearbook* were used (*Online Newsroom* and *Online Newsroom Size*). Interestingly, investment in newsroom, measured by the number of roles under online-committed division, is generally used as a rough indicator of quality (Rosenstiel and Mitchell 2004). I created another dummy variable, which was coded one if a newspaper launched its own website before 1996, the year most of the high-status newspapers started to present their news on the web (*Innovator*), because the first movers could have different characteristics from other second or late movers in terms of adopting a new technology and implementing it. The audiotex variable was also included in this model in order to capture the effects of alternative technology on website interactivity (*Audiotex*).

At the newspaper company level, I included the same three control variables I used for the website launch analyses: average circulation, average circulation change and national newspaper variables (*Average Circulation [ln]*, *Average Circulation Change* and *National*

Newspapers). The political inclination of a newspaper was also controlled for any systemic

difference in a new technology adoption behavior with respect to political preference (*Poltical*

inclination). At the parent company level, it has also been well documented that media

ownership affects newspaper contents, including the website development policy (Bagdikian

2000; Beam 1993; Lacy, Shaver, and St. Cyr 1996). Therefore, I controlled for the effects of

media ownership by coding a dummy variable for each parent company that has more than one

newspaper in the sample (*Parent Company Dummy Variables*). Finally, I controlled for the size

of each local market (*County Population [ln]*), because the main markets for most of the

newspapers in the sample are their own local markets and it has been well-documented that local

market size affects newspaper performance or activities (Meyer 2004).

Annually updated *Editor and Publisher International Yearbook* data from 1993 to 2003

for the website launch analyses and from 2000 to 2007 for the website content analyses were

used to measure all the control variables. The average circulation lagged one year behind and

Table 1 contains summary statistics and bivariate correlations.

Insert Table 1 around here

Statistical Analyses

I use the parametric event-history model to analyze the launch date of websites with time-

varying covariates (Cleves, Gutierrez, Gould, and Marchenko 2008; Kalbfleisch and Prentice

2002). I split the event history of all the firms into one year[4] spells with year 1 beginning in 1994

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[4] In the analyses, each year starts in October in a year before the given year and ends in
September in the given year, following the ABC's definition of a year. For example, year 1
(1994) indicates from October 1993 to September 1994.

and ending with year 10 in 2003. The hazard rate of launching a website initially increased with time but then decreased, because some newspapers persisted to adopt the electronic version of publishing news (Li 2006). Therefore, the baseline hazard follows a log-logistic distribution. For the website content analyses, the negative binomial regression model has been applied, because the dependent variables are count variables and both of them have high variances compared to the means as shown in Table 1.

RESULTS

Table 2 and Table 3 present the results of the event history analyses and negative binomial regression analyses of two dependent variables, respectively. Table 4 shows the results of negative binomial regression analyses of multimedia usage as a control group for the interactivity variable. All of the models were also estimated without the New York Times because of this paper's unique social position in the U.S. newspaper industry.

Insert Table 2 around here

Model 1 provides a baseline model containing all the control variables for the event history analyses of website adoption times, showing that the existence of an online service and the size of a newspaper negatively affect the adoption times: a newspaper company with an online service and a large newspaper tend to launch its website faster than others. Various parent companies also have significantly different effects on adoption times, indicating that parent companies have different tendencies to adopt the new technology. Interestingly, the website

launch by competitors in the same county positively affects adoption times. Late adopters might choose not to launch their websites to differentiate themselves from competing newspapers that already have had websites. Models 2 and 3 add the main independent variable and the square term respectively and raise the possibility of non-monotonic status effects on adoption times. Although the main effect is not significant, adding the square term indicates that a newspaper with two or three Pulitzer Prizes tends to launch its website faster than any other newspapers. Excluding the New York Times from the model does not change the overall results.

In order to examine this non-linear relationship in greater detail, in Models 5 and 6, I conduct the same adoption-time analyses with the launch date data on a monthly basis for 93 newspapers. Month 1 begins in October, 1993 when the first journalism site on the web was launched at the University of Florida (Carlson 2005) and it ends with Month 111 in December, 2002. The results show that middle-status newspapers with three Pulitzer Prizes are most likely to launch their own website first with a statistical significance. If the New York Times is excluded from the analyses, the significance of the curvilinear relationship becomes stronger. The directions of the other control variables remain the same for the monthly adoption time analyses, but the significances of some variables change. For example, the high education rate has a significantly negative impact on adoption times in Models 5 and 6: the higher the education level of the population in a given county, the faster a newspaper in that county launches its website.

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                  Insert Table 3 around here
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Model 7 provides a baseline model with control variables only and it shows that the length of web presence positively affects the interactivity: the longer a newspaper offers news on

the web, the higher the interactivity of its website. Moreover, the existence of an online-

committed division has a negative effect; commitment to digital media does not necessarily

mean commitment to interactivity since digital media has several aforementioned dimensions.[5]

Other variables, except for some parent company dummy variables, do not significantly

influence the development of interactive websites.[6] Models 8 and 9 provide strong support for

the second hypothesis that middle-status newspapers are most likely to present interactive

websites. Model 8 adds the independent variable and Model 9, the square term. Model 9

indicates that the cumulative number of awards has a curvilinear relationship with the level of

website interactivity: newspapers with four to five Pulitzer Prizes are most likely to have

interactive websites. Among the control variables, the length of web presence still has a positive

effect and the existence of online newsroom a negative effect on interactivity. In addition, first

movers are less likely to have interactive websites, which mirrors the findings of previous

studies. In the early stage, innovators may experience a disadvantage because of the lack of

available technology (Sundar 2000; Zeng and Li 2006). Model 10 replicates Model 9 without the

New York Times and the results are still supported.

Insert Table 4 around here

As robustness checks, I conducted several analyses. First, although most parent

companies allow their newspapers to develop their own websites, two parent companies, Knight-

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[5] For example, one of the largest parent companies, Knight-Ridder Newspapers, formally separated the New Media division from other divisions around 2000, but it paid less attention to developing interactive websites (Gilbert 2006). The significance of this negative relationship indeed disappeared when newspapers from this parent company were excluded from the analyses as in Model 11 and Model 12.

[6] Parent company dummies have not been displayed in Table 3 and 4. The data may be available upon request.

Ridder Newspapers and Advance Publications, operate the same website templates for all of their newspapers. Therefore, Model 11 excludes the newspapers from these two media chains and the effects of the cumulative number of the Pulitzer awards become more significant. Second, a few newspapers in the sample, such as the *New York Times*, the *Wall Street Journal*, the *Los Angeles Times* or *Christian Science Monitor*, reach far beyond their local markets whereas most of the other dailies focus on their own markets. One might argue that local newspapers do not compete directly with other local newspapers in different regions; therefore, they need not care about the national-level awards. In order to control for this argument, I excluded national-wide newspapers in Model 12 and the U-shaped relationship is still significant: Although the statistical significance becomes weaker, local newspapers still react to the same discontinuous technology differently depending on their status levels, which means that local newspapers are concerned about their status levels even when they are not directly competing with other local newspapers. The effect of the political inclination of a newspaper becomes significant, as political issues drive most audiences to discussion boards when other factors such as market reach are controlled (Hindman 2009).

Finally, I replicated Model 7 to Model 12 with a different dependent variable, the index of multimedia usage (Table 4). As I predicted, the number of the Pulitzer Prizes and the square term do not have significant effects on developing multimedia-enriched websites. Only when the most prestigious newspapers, such as the *New York Times*, were excluded from the analyses as shown in Model 16 and Model 18, the independent variable has a negative effect on multimedia usage. The negative relationship indicates that low-status newspapers are likely to have multimedia-enriched websites, as providing multimedia news is an illegitimate task for newspapers because it is a task for television or radio stations. However, the results also indicate

that the very high-status newspapers, which were excluded from the analyses, are less influenced by the relationship, because their high-status positions help them cross the borders between the text-based newspaper industry and the multimedia-based television or radio industry. That is, middle-status newspapers focus on interactivity as the most distinctive aspect of the discontinuous technology, whereas the multimedia aspect of the new technology is commonly adopted by newspapers as middle-status conformity literature indicates (Dittes and Kelly 1956; Phillips and Zuckerman 2001). Among control variables, the length of web presence has a positive effect on multimedia usage and firm size plays a more important role in multimedia usage as more financial resources are needed to develop multimedia-related reporting skills (Peng et al. 1999). First movers also tend to suffer from the lack of available multimedia-related technologies.

DISCUSSION AND CONCLUSION

This study focuses on the role of status in the diffusion of a discontinuous technology and asks specifically how status affects the adoption motivation of discontinuous technology and its implementation process. Middle-status organizations perceive the discontinuous technology as an opportunity for gain whereas high-status organizations as a threat to loss. Therefore, middle-status organizations tend to adopt the new technology first whereas high-status organizations tend to be the early followers. I also emphasize that the inherent uncertainty of the discontinuous technology creates variations in ways of implementing the discontinuous technology and theorize how different adoption motivations determine choices among different implementation

forms. Middle-status organizations strive to segregate the current market and the new field created by the discontinuous technology whereas high-status organizations seek to blur the potential boundary between the two. The empirical results provide strong support for my arguments in the context of print-based newspapers' adopting a discontinuous technology, digital media. Middle-status newspapers were the first to launch their websites and had the most interactive websites where newspaper readers can actively participate in news-producing activities, challenging the previous market constructed around the notion that newspapers are news producers (Boczkowski 2004).

My dissertation makes several important contributions to research on diffusion of innovation, research on strategic groups, and research on the role of status in markets. First, my research contributes to research on discontinuous technologies by explaining how competence-enhancing or competence-destroying discontinuity occurs (Tushman and Anderson 1986). My study argued that incumbent firms with different status levels attempt to emphasize different aspects of the same discontinuous technology. Depending on whose attempts become successful, external audiences may form different expectations for the new field triggered by the discontinuous technology as the establishment of the new market identity is associated with adoption consequences (Hannan and Freeman 1989). High-status firms offer a market identity, which is similar to that in the previous market, and if this market identity prevails, the new technology would be considered as competence-enhancing (Tushman and Anderson 1986). Middle-status firms offer a market identity that is distinct from that in the previous market, and if this market identity attracts more audiences, then the discontinuous technology would be regarded as competence-destroying. Therefore, this study suggests that it is difficult to pre-determine the nature of any discontinuous technology, whether it is competence-enhancing or

competence-destroying, before considering all the implementing processes, including the interactions between participants with different status levels and external audiences.

Second, my dissertation links literature on strategic groups and literature on status in markets. Strategic groups are defined as "groups of firms, where each group consists of firms following similar strategies in terms of the key decision variable" in an industry (Porter 1979: 215) and two generic positions in markets –low-cost and differentiation positions, have been the focus of academic attention (Porter 1980; Dess and Davis 1984).[7] My research suggests that high-status organizations often occupy the differentiation/premium market niche whereas low-status organizations tend to belong to the low-cost market niche. Since markets can be sorted into various positions by perceived quality, high-status organizations, which are expected to produce high-quality products, occupy the differentiation/premium market niche. Low-status firms cannot produce high-quality products as high-status firms and audiences do not expect them to do so. However, they can focus on lowering costs, which makes them belong to the low-cost market niche. Therefore, high- or low-status organizations have clear market niches and focus on their own niches. It is middle-status firms that tend to be caught by a double-trap. They do not have a clearly defined market niche, which puts them into a "stuck-in-the-middle" situation (Porter 1980:41). However, at the same time, they cannot freely change the stuck-in-the-middle condition even with the unlikely assumption that they have abundant resources, because they also face the strongest conformity pressures.

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[7] Firms, which occupy the differentiation position, focus on external audiences who value uniqueness or quality and strive to create the industry-wide perception of being unique. On the contrary, organizations in the low-cost position concentrate on audiences who prefer lower costs given a certain-level quality and try to lower the overall costs through tight cost control (Porter 1980).

Third, this study contributes to research on the role of status in markets and middle-status conformity. I emphasize that discontinuous technologies are used as a mechanism to relax conformity pressures, especially on middle-status organizations and theorize how middle-status firms, a group of organizations traditionally viewed in organizational theory and strategy to be the least innovative and most conforming, can be the most innovative in terms of adopting timing and the implementation of discontinuous technologies. Previous studies in this line focus on how conformity pressures prevent middle-status organizations from differentiating themselves in terms of social and psychological dimensions (Dittes and Kelley 1956; Phillips and Zuckerman 2001). However, it was middle-status chefs who initiated nouvelle cuisine in the French gastronomy industry, which is very distinct from traditional French cuisine (Rao, Monin, and Durand 2005). My study explains why young, but not peripheral chefs, "who had to climb up the ladder of stardom and acquire sociopolitical legitimacy," (Rao, Monin, and Durand 2005: 974; Rao 2009) were the first to initiate the new movements and why they emphasized the distinctive dimensions of new cuisine from classical cuisine because they wanted to differentiate nouvelle cuisine from the previous dominant cuisine without violating currently existing conformity pressures.

Moreover, my research expands middle-status conformity literature by tackling the basic assumption in this line of research (Dittes and Kelley 1956; Phillips and Zuckerman 2001; Jensen 2011). Not every paper in middle-status conformity literature argues that middle-status firms are passive. Like my research, Jensen (2011) also argued that sometimes middle-status actors can be innovative. In the Danish movie industry, middle-status film actors and actresses were more likely to deviate and participate in the legitimizing process of an illegitimate form of movie genre, sex comedy in the late sixties and the early seventies. High-status actors and

actresses had the ability to deviate from norms and expectations, but this ability did not, in itself, motivate high-status actors to do so, because the opportunity costs of losing high-status positions was significantly high. However, like other studies in middle-status conformity, he assumed that the overall expectations of firms in markets are fully established: audiences know what to expect from identity carriers. Actors and actresses knew how general audiences perceived a particular kind of movie genre, such as pornography, and what kind of reactions general audiences might have if they starred in a certain kind of movie genre. My dissertation tackles this basic assumption and examines how organizations with different-status levels react to discontinuous technologies, which means that conformity pressures have not been fully established.

A potential limitation of this study is that by focusing on middle- and high-status organizations' behaviors, I left low-status organizations' response to the discontinuous technology relatively unexplored. Future empirical research should examine the low-status organizations' behaviors in greater detail to shed light on the effects of the discontinuous technology on the overall social system, including high-, middle-, and low-status organizations and the potentially interesting dynamics between members within the systems. In addition, although I theorize the sequential adoptions of the discontinuous technology by middle- and high-status organizations, the empirical findings focused on the inverted U-shape relationship between status and adoption timing. The refined operationalization of the statistical modeling will enhance the understanding of the adoption process. Finally, by focusing on the motivation story, the consequences of distinct offers by middle- and high-status organizations are not addressed as mentioned above. It is important to explore the subsequent relationship to fully understand the diffusion process of the discontinuous technology from the status-identity

perspective and examine how this diffusion process affects the nature of the new market identity related to the technology.

In conclusion, this study makes important contributions to research on the adoption of a discontinuous technology from the status and market identity perspective. I showed that middle- and high-status firms perceive the discontinuous technology differently, which also influences the adoption timing and the manner of implementation. In other words, the study shows that status and market identity can either facilitate organizations' movements beyond 'traditional' boundaries or constrain their movements within boundaries: Social positions in the social system and market identities around the positions lead to differences in the perceptions of the same new technology and thus, impact the subsequent reactions.

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TABLE 1
Summary Statistics and Bivariate Correlations

	Mean	STD	1)	2)	3)	4)	5)	6)	7)	8)	10)	11)	12)	13)	14)	15)
Website Launch																
1) Pulitzer [ln]	0.66	0.77	1.00													
2) Square of Pulitzer [ln]	1.04	2.15	0.91	1.00												
3) Online Service	0.32	0.47	0.20	0.23	1.00											
4) Audiotex	0.52	0.50	0.09	0.12	0.16	1.00										
5) Average Circulation [ln]	11.39	1.13	0.39	0.47	0.29	0.38	1.00									
6) National Newspaper	0.02	0.13	0.09	0.12	0.13	-0.06	0.14	1.00								
7) Spanish Newspaper	0.02	0.16	-0.14	-0.08	0.02	0.04	0.01	-0.02	1.00							
8) Knight Ridder	0.08	0.28	0.09	0.07	0.04	-0.07	0.11	-0.04	0.29	1.00						
10) Gannett Company	0.17	0.37	-0.14	-0.09	-0.13	-0.14	-0.05	0.01	-0.07	-0.13	1.00					
11) Hearst Corporation	0.02	0.14	-0.06	-0.05	-0.03	0.09	0.11	-0.02	-0.02	-0.04	-0.06	1.00				
12) Landmark Communications	0.01	0.09	-0.05	-0.03	0.09	0.05	0.00	-0.01	-0.02	-0.03	-0.04	-0.01	1.00			
13) County Competitor Adoption	0.06	0.37	-0.09	-0.03	0.12	0.03	0.05	-0.02	0.49	0.06	-0.06	0.00	-0.02	1.00		
14) Young Generation Rate	0.29	0.04	0.15	0.17	0.12	0.04	0.37	0.20	-0.02	0.12	0.01	0.07	0.07	0.04	1.00	
15) Hihg Education Rate	0.22	0.06	0.23	0.26	0.16	0.10	0.37	0.19	-0.03	-0.01	-0.03	0.13	-0.02	-0.02	0.53	1.00
Website Content																
1) Interactivity	8.98	5.51	1.00													
2) Multimedia Usage	6.48	6.61	0.44	1.00												
3) Pulitzer [ln]	0.82	0.88	0.09	0.12	1.00											
4) Square of Pulitzer [ln]	1.44	2.64	0.04	0.12	0.91	1.00										
5) Web Presence Length	8.78	2.39	0.30	0.53	0.09	0.09	1.00									
6) Online Newsroom	0.87	0.33	-0.01	0.11	0.12	0.08	0.05	1.00								
7) Online Newsroom Size	2.39	1.79	0.00	0.16	0.25	0.22	0.05	0.51	1.00							
8) Innovator	0.25	0.43	0.01	0.07	0.06	0.02	0.33	0.09	0.21	1.00						
9) Audiotex	0.37	0.48	0.02	0.06	-0.06	-0.01	0.00	0.17	0.21	0.13	1.00					
10) Average Circulation [ln]	11.62	1.04	0.09	0.21	0.50	0.54	0.18	0.30	0.45	0.19	0.08	1.00				
11) Average Circulation Change	-0.02	0.05	-0.08	-0.13	-0.08	-0.05	-0.10	0.03	-0.01	0.07	0.08	-0.01	1.00			
12) National Newspaper	0.02	0.13	0.00	-0.05	0.12	0.15	0.02	-0.24	-0.14	-0.08	-0.10	0.06	-0.03	1.00		
13) Political Inclination	0.08	0.27	0.04	0.03	-0.05	-0.05	0.05	0.04	0.08	-0.05	-0.12	0.06	0.00	-0.04	1.00	
14) County Population [ln]	13.19	1.27	0.01	0.15	0.37	0.45	0.10	0.27	0.40	0.11	-0.04	0.73	-0.01	-0.03	0.22	1.00

TABLE 2
Event History Analyses of Adoption Times

Variable	Yearly Data				Monthly Data	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Pulitzer [ln]		0.037	-0.100*	-0.112	-0.174*	-0.243**
		(0.035)	(0.060)	(0.073)	(0.098)	(0.102)
Square of Pulitzer [ln]			0.053***	0.059**	0.089***	0.125***
			(0.018)	(0.027)	(0.031)	(0.041)
Online Service	-0.216***	-0.220***	-0.223***	-0.223***	-0.362***	-0.370***
	(0.053)	(0.054)	(0.053)	(0.053)	(0.095)	(0.096)
Audiotex	-0.046	-0.039	-0.040	-0.039	-0.024	-0.021
	(0.053)	(0.053)	(0.054)	(0.054)	(0.084)	(0.089)
Average Circulation [ln]	-0.111***	-0.127***	-0.140***	-0.142***	-0.100	-0.119*
	(0.030)	(0.035)	(0.035)	(0.036)	(0.068)	(0.072)
Average Circulation Change	-0.263	-0.193	-0.200	-0.188	-0.625	-0.545
	(0.551)	(0.550)	(0.554)	(0.557)	(1.278)	(1.278)
National Newspaper	0.039	0.043	0.045	0.040	0.057	-0.004
	(0.155)	(0.143)	(0.123)	(0.119)	(0.758)	(0.600)
Spanish Newspaper	0.321	0.330	0.344	0.355	0.372	0.432
	(0.291)	(0.307)	(0.338)	(0.362)	(0.434)	(0.725)
Knight Ridder	-0.058	-0.066	-0.045	-0.045	-0.122	-0.121
	(0.070)	(0.072)	(0.071)	(0.071)	(0.118)	(0.119)
Hearst Corporation	-0.168	-0.142	-0.147	-0.148	-0.315	-0.317
	(0.150)	(0.163)	(0.138)	(0.137)	(0.342)	(0.335)
Landmark Communications	-0.703***	-0.693**	-0.690***	-0.690***	-0.823***	-0.808***
	(0.271)	(0.282)	(0.236)	(0.231)	(0.075)	(0.075)
Gannett Company	0.225**	0.232**	0.213**	0.211**	0.493**	0.531***
	(0.104)	(0.101)	(0.105)	(0.106)	(0.210)	(0.201)
County Competitor Adoption	0.157*	0.160*	0.145	0.141	0.174	0.148
	(0.086)	(0.091)	(0.098)	(0.105)	(0.136)	(0.225)
County High Education Rate	-0.171	-0.209	-0.255	-0.226	-1.861**	-1.653*
	(0.500)	(0.503)	(0.471)	(0.491)	(0.893)	(0.906)
Constant	2.667***	2.863***	3.017***	3.042***	5.302***	5.491***
	(0.366)	(0.448)	(0.440)	(0.456)	(0.763)	(0.805)
New York Times	Included	Included	Included	Excluded	Included	Excluded
Observations	656	656	656	653	282	279

Models 1 to 4 are discrete time (yearly) log-logistic models. There were 195 firms; 193 failure events occurred. Models 5 and 6 are a discrete time (monthly) log-logistic models. There were 93 firms; 92 failure events occurred. Robust standard errors are shown in parentheses *** p<0.01, ** p<0.05, * p<0.1

TABLE 3
Results of Negative Binomial Regression on Interactivity

| Variable	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Pulitzer [ln]		0.044	0.218**	0.253**	0.327***	0.348**
		(0.045)	(0.100)	(0.112)	(0.121)	(0.150)
Square of Pulitzer [ln]			-0.070**	-0.088**	-0.102**	-0.110*
			(0.036)	(0.045)	(0.042)	(0.063)
Web Presence Length	0.097***	0.096***	0.096***	0.096***	0.092***	0.093***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)	(0.008)
Online Newsroom	-0.176**	-0.176**	-0.195**	-0.194**	-0.119	-0.091
	(0.085)	(0.085)	(0.085)	(0.085)	(0.121)	(0.123)
Online Newsroom Size	0.020	0.019	0.019	0.017	0.021	0.014
	(0.017)	(0.017)	(0.017)	(0.017)	(0.018)	(0.019)
Innovator	-0.145	-0.142	-0.161*	-0.158*	-0.108	-0.103
	(0.094)	(0.093)	(0.093)	(0.094)	(0.117)	(0.118)
Audiotex	0.070	0.074	0.083	0.082	0.096	0.086
	(0.061)	(0.061)	(0.061)	(0.062)	(0.074)	(0.075)
Average Circulation [ln]	0.081	0.059	0.060	0.067	0.047	0.061
	(0.056)	(0.060)	(0.060)	(0.060)	(0.068)	(0.070)
Average Circulation Change	-0.060	-0.047	-0.034	-0.038	-0.164	-0.260
	(0.289)	(0.289)	(0.290)	(0.291)	(0.321)	(0.340)
National Newspaper	0.373	0.337	0.332	0.355	0.438	
	(0.280)	(0.282)	(0.280)	(0.283)	(0.312)	
Political Inclination	0.166	0.178	0.192	0.191	0.283*	0.288*
	(0.146)	(0.147)	(0.146)	(0.146)	(0.167)	(0.169)
County Population [ln]	-0.052	-0.048	-0.023	-0.026	-0.024	-0.025
	(0.047)	(0.047)	(0.048)	(0.048)	(0.055)	(0.056)
Parent Company Dummy Variables	Included	Included	Included	Included	Included	Included
Constant	-0.692	-0.528	-0.848	-0.834	-0.835	-0.983
	(0.562)	(0.585)	(0.605)	(0.614)	(0.686)	(0.720)
Knight Ridder & Advance Pulications	Included	Included	Included	Included	Excluded	Excluded
National Geography	Included	Included	Included	Included	Included	Excluded
New York Times	Included	Included	Included	Excluded	Included	Excluded
Number of observations	1086	1086	1086	1080	877	846
Number of groups	162	162	162	161	132	127
Log likelihood	-3028.62	-3028.15	-3026.21	-3013.10	-2421.54	-2343.22
Δ (–2 * log likelihood)		0.94	4.82*	5.13*	7.42**	6.31**

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

TABLE 4
Results of Negative Binomial Regression on Multimedia Usage

Variable	Model 13	Model 14	Model 15	Model 16	Model 17	Model 18
Pulitzer [ln]		-0.071	-0.150	-0.091*	-0.101	-0.159**
		(0.052)	(0.113)	(0.053)	(0.064)	(0.070)
Square of Pulitzer [ln]			0.031			
			(0.039)			
Web Presence Length	0.323***	0.324***	0.325***	0.326***	0.286***	0.290***
	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.016)
Online Newsroom	0.102	0.100	0.118	0.132	0.125	0.130
	(0.143)	(0.143)	(0.145)	(0.144)	(0.199)	(0.206)
Online Newsroom Size	-0.009	-0.004	-0.004	-0.008	-0.006	-0.001
	(0.024)	(0.024)	(0.024)	(0.024)	(0.027)	(0.028)
Innovator	-0.333***	-0.346***	-0.340***	-0.329***	-0.263**	-0.259*
	(0.103)	(0.104)	(0.104)	(0.104)	(0.132)	(0.133)
Audiotex	0.104	0.092	0.085	0.073	0.095	0.070
	(0.080)	(0.081)	(0.081)	(0.081)	(0.097)	(0.099)
Average Circulation [ln]	0.229***	0.277***	0.277***	0.285***	0.319***	0.336***
	(0.066)	(0.076)	(0.076)	(0.076)	(0.090)	(0.093)
Average Circulation Change	-0.331	-0.338	-0.364	-0.379	-0.057	-0.214
	(0.570)	(0.573)	(0.575)	(0.578)	(0.593)	(0.631)
National Newspaper	-0.463	-0.407	-0.403	-0.343	-0.407	
	(0.335)	(0.338)	(0.339)	(0.337)	(0.388)	
Political Inclination	0.053	0.036	0.027	0.027	0.074	0.044
	(0.153)	(0.154)	(0.154)	(0.153)	(0.182)	(0.182)
County Population [ln]	0.010	0.002	-0.010	-0.018	0.012	-0.010
	(0.051)	(0.051)	(0.053)	(0.052)	(0.060)	(0.063)
Parent Company Dummy Variables	Included	Included	Included	Included	Included	Included
Constant	-7.590***	-7.951***	-7.844***	-7.849***	-8.121***	-8.232***
	(0.751)	(0.808)	(0.817)	(0.812)	(0.935)	(0.993)
Knight Ridder & Advance Pulications	Included	Included	Included	Included	Excluded	Excluded
National Coverage	Included	Included	Included	Included	Included	Excluded
New York Times	Included	Included	Included	Excluded	Included	Excluded
Number of observations	1086	1086	1086	1080	877	846
Number of groups	162	162	162	161	132	127
Log likelihood	-2753.02	-2752.10	-2751.79	-2733.29	-2288.41	-2208.05
Δ (–2 * log likelihood)		1.83	2.45	2.95*	2.54	5.29**

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Figure 1. Status-Identity Framework and Market Space of Print Media Industry
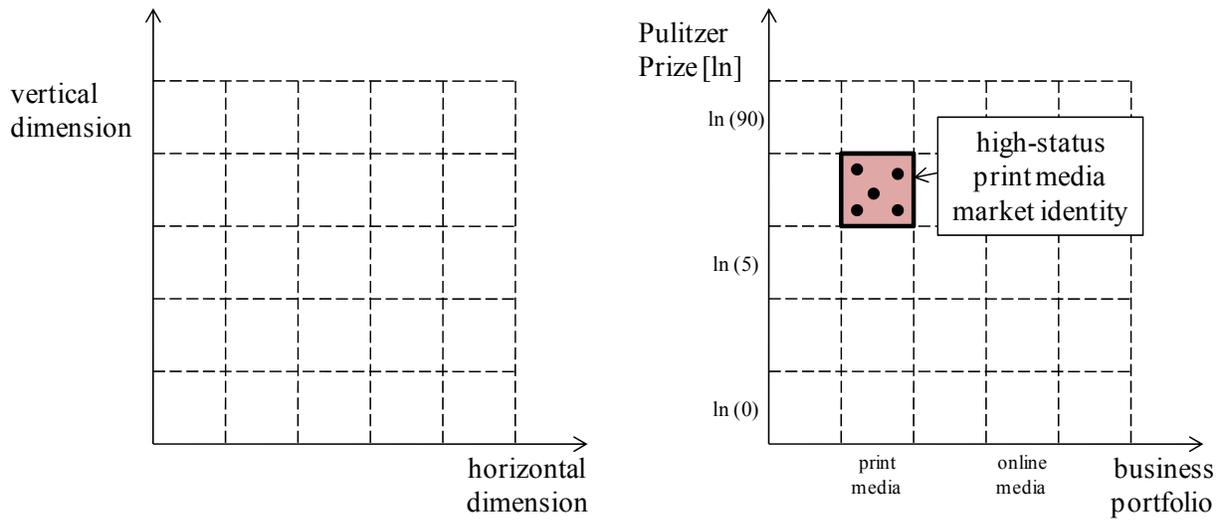
APPENDIX A

Coding Scheme

1. Interactivity (10pts for each front page)
   a. Comment visibility (2pts): Are comments on articles (if exist) visible from the front page - comments (##), most commented articles, or post a comment.
   b. Forum (1pt): Does the front page have a direct link to a forum (e.g. discussion, debate, message boards) site?
   c. Forum visibility (1pt): Are forum issues visible from the front page?
   d. User generated article (1pt): Are user generated articles or sections (e.g. letters to the editors or news tip section) visible from the front page?
   e. Picture sharing (1pt): Can readers share their pictures on the web? (e.g. send us your own photos, reader submitted photos…)
   f. Chat (1pt): Does the front page have a direct link to a chat room?
   g. Reader polls (1pt): Does the front page have a spot that allows a reader to vote for a certain question?
   h. Reader publishing (2pts): Does the site have a section where readers can publish their own articles without the approval of newspaper staffs (e.g. reader blog, self-publishing section)?

2. Multimedia (6pts for each front page)
   a. Multimedia (1pt): Does the front page have a direct link to a multimedia (video, interactive or audio, or any combination of them) section?
   b. Multimedia visibility (1pt): Is any article (the title of the article) from the multimedia section visible from the front page?
   c. Own multimedia (1pt): Does a newspaper present its own multimedia news?
   d. Podcast (1pt): Does the front page a direct link to a podcast or any audio-focused section?
   e. Video visibility (1pt for a direct watch): How can videos be watched? 0: no video, 1: direct link to another page, 2: could be directly watched on the front page
   f. Interactive feature (1pt): Does the front page have interactive features (e.g. interactive graph or features. Simple charts or graphs are not included here.)?