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Publisher: Routledge

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## International Journal on Media Management

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/hijm20>

### The Bricks That Build the Clicks: Newsroom Investments and Newspaper Online Performance

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Available online: 09 Jun 2011

To cite this article: Yihui (Elina) Tang, Shrihari (Hari) Sridhar, Esther Thorson & Murali K. Mantrala (2011): The Bricks That Build the Clicks: Newsroom Investments and Newspaper Online Performance, *International Journal on Media Management*, 13:2, 107-128

To link to this article: <http://dx.doi.org/10.1080/14241277.2011.568420>

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## RESEARCH ARTICLES

# The Bricks That Build the Clicks: Newsroom Investments and Newspaper Online Performance

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*As the world embraces the Internet for media consumption, the concept of a hybrid newspaper—a printed newspaper with a companion Web site—is becoming more prevalent. Many hope that online advertising revenue (OAR) will help newspapers make up for losses in print (offline) revenue. However, there is little research that has empirically investigated whether and how investment in the “bricks” (i.e., the newsroom staff and resources that produce news content) will help to build “clicks” (i.e., more online visitors and, subsequently, OAR). This article examines the issue via an econometric analysis of 12 years of longitudinal data from a hybrid newspaper. The results show that the basic success of the clicks model depends on the investment in the bricks of the newspaper (i.e., its newsroom). Specifically, although news gathering is a very expensive part of the news business, it is also a creator of value and directly brings in OAR in addition to print advertising revenue. Therefore, as newspapers seek to capture more OAR, they may need to increase, rather than decrease, investment levels in the newsroom.*

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As the world embraces the Internet for media consumption, the concept of a hybrid newspaper—a printed newspaper with a companion Web site—is becoming more prevalent. This strategic move by newspapers has emerged as a way to make up for losses in print (offline) revenue. However, there is little research that has empirically investigated whether and how investment in the more traditional “bricks” (i.e., the newsroom staff and resources that produce news content) will help to build “clicks” (i.e., more online visitors and, subsequently, online advertising revenue [OAR]). This issue is the focus of this article; we provide the motivation later.

The newspaper industry in the United States is struggling. According to 2010 State of the News Media Report (Project for Excellence in Journalism [PEJ], 2010), daily newspapers lost 10.6% of their circulation within the last year, and 25.6% since 2000.<sup>1</sup> Furthermore, falling circulation has been accompanied by declining print advertising revenue (PAR), the source of over 90% of many newspapers' total revenues. Advertising revenue declined by 26% in 2009, and 43% over the previous 3 years. As a result of these adverse trends in revenues, many newspaper companies have been forced into bankruptcy over the last decade (e.g., the Tribune Company, *Star-Tribune* of Minneapolis, and the *Journal Register*, in 2009). The ones that have survived have shown positive profit numbers by making deep cuts in newsroom investments, including the “newshole” (i.e., the portion of a newspaper available for editorial matter, news, & editorial departments) and, most crucially, news professional staffing levels (e.g., Rosenstiel & Mitchell, 2004). In 2008, an estimated 15,500 newspaper jobs were eliminated (Reilly, 2009), not including those lost from attrition. One half of those positions were from newsrooms. Thus, newsrooms have shrunk by 25% in 3 years.

One positive trend during this period has been the growth in online news readership. According to the 2010 survey by the Pew Foundation's PEJ, 71% of Internet users get their news online, and the number of people getting their news from Web sites is now at around 53% of all American adults. This trend has attracted online advertisers, and newspaper OAR has increased by 23% since 2004 (PEJ, 2010). Not surprisingly, many newspaper publishers view a hybrid operation—a print newspaper with a companion Web site to capture increasing online advertising dollars—as their route to survival, and are diverting resources from their print operations to Web site development and use of new interactive technologies (e.g., audio, video, animation, and social networks)—for example, Dibeian and Garrison (2001), Kuttner (2007), Li (2006), and Wildman (2008).

In some cases, some publishers have kept their print and online newsrooms separate, whereas others have moved toward more integrated models, allowing some reductions in online news staffs ([www.trends-in-newsrooms.org/articles.php?id=25](http://www.trends-in-newsrooms.org/articles.php?id=25)). Lack of knowledge on the optimal organizational model notwithstanding, overall, cuts in print newsroom investments have dominated those related to the online division. The

underlying managerial logic is expressed in the following quote attributed to Tom Davidson (Davidson, 2009), a former Vice President for content at Tribune Interactive (before the company's situation worsened and it filed for reorganization under bankruptcy protection):

Online wasn't immune to cuts, but online was cut less in general than core newsrooms and core news operations. . . . You feed resources to the growing part of your business and you cut resources to those that aren't growing anymore. Online tended to fare better.

This logic, however, glosses over the dependency of online revenue growth on the offline (i.e., print) news operation's performance (e.g., circulation). Several industry analysts have cautioned against ignoring this dependency over the last few years (e.g., Morton, 2008; Mutter, 2009), with apparently little impact on the trend of print news staff cutbacks. This could be because of the lack of quantitative evidence relating print newsroom investments to OAR performance in the newspaper management research literatures. For instance, past research by journalism scholars has shown that reducing newsroom personnel leads to loss of diversity of content and direct loss of offline circulation (Blankenburg, 1989; Lacy & Martin, 1998; Lacy & Sohn, 1990; Rosenstiel & Mitchell, 2004). However, so far there has been no study quantifying the impact of offline newsroom investments on OARs. This article aims to fill this research gap.

More specifically, this article investigates the following research questions:

- RQ1: What is the impact of changes in newsroom investments on offline subscriptions, PAR, and OAR?
- RQ2: Does print newsroom investment contribute to OAR? If so, what are the implications for a hybrid newspaper's newsroom investment strategy?

To answer these questions, we propose a conceptual model relating newsroom investments and hybrid paper financial performance—as measured by its subscriptions, print, and OAR streams—that is based on the “financial commitment” concept of news quality (Litman & Bridges, 1986) and related theory (e.g., Lacy & Martin, 2004) in the journalism literature. Specifically, we propose that in a competitive marketplace, increases in newsroom investments (news quality) lead to increases in offline subscription (print circulation) revenues. Further, any increase in print subscriptions made possible by increased newsroom investments results in increased online, as well as offline advertising revenues, since advertisers will want to target readers through both channels—that is, our model posits that subscription revenues mediate the relation between print newsroom investment and offline or OARs.

We test our framework with an econometric analysis of longitudinal data on newsroom and subscription revenue, print, and OARs from a hybrid local daily newspaper company. In performing our analysis, we control for other variables (price and advertising selling expenditures), and perform necessary robustness checks.

Our results are supportive of our hypotheses and indicate that (a) newsroom investment increase subscription revenues and (b) subscription revenues fully mediate the relation between newsroom investment and print and online advertiser revenues, respectively. Thus, our study is the first to establish that increased print newsroom investment improves the online performance of a hybrid newspaper.

Further, utilizing the estimated values of model parameters in a simulation analysis, we show the marginal effects of decreasing newsroom investments on offline and OARs, which shows the deleterious consequences of cutbacks. Thus, investment in the newspaper's "bricks" does, in fact, build its online "clicks," implying that it is shortsighted and counterproductive for newspaper publishers, especially those interested in developing their hybrid model, to substantially reduce or divert resources from their print newsroom to fund direct investments in their online operation.

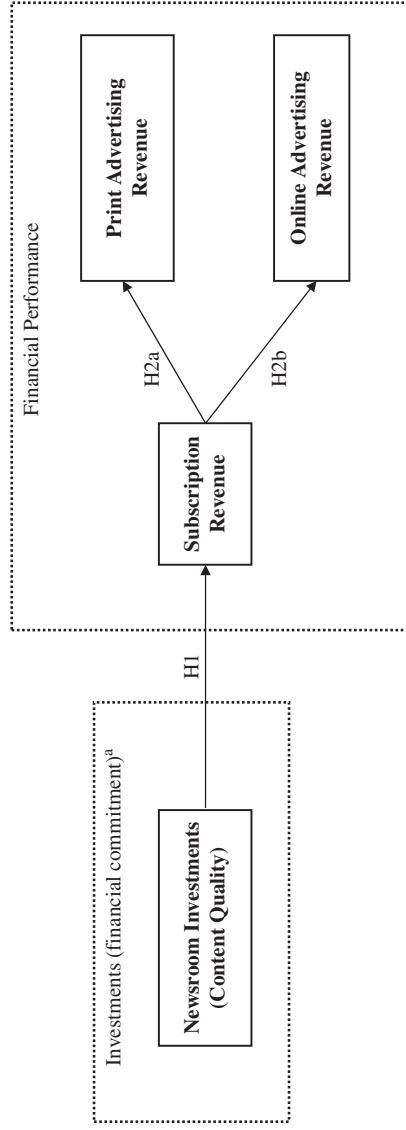
The rest of this article is organized as follows: In the next section, we review the relevant literature and present our conceptual framework and hypotheses with their theoretical underpinnings. Then, we build an econometric model based on this theory, followed by a description of our data and model estimation results. In the final section, we discuss the findings and the implications for journalism scholars and newspaper managers.

## THEORY

In this section, we propose a model of how newsroom investments could influence hybrid newspaper performance by drawing on the extant theoretical literatures in journalism, marketing, and economics. Our conceptual model is presented in Figure 1 and consists of two main relations: the relation between (print) newsroom investments and subscription revenue, and the mediating role played by subscription revenue on the relation between newsroom investments and PAR or OAR. In the following, we discuss the theoretical basis for each of the posited relations.

### The Newsroom Investment–Subscription Revenue Relation

In a seminal article, Lacy (1992) outlined a four-step conceptual model of the financial commitment process (Litman & Bridges, 1986) in the context of news media competition. According to Lacy's model, first, as the intensity of competition increases, the amount of money committed to news content



**FIGURE 1** Conceptual model linking newsroom investments to financial performance.<sup>a</sup>We depict subscription revenue as a full mediator of the relation between newsroom production investments and print advertising revenue and online advertising revenue. However, we do test for a partial mediation effect (i.e., the direct relation between newsroom investments and print advertising revenue and online advertising revenue).

by a competitor increases in order to differentiate itself from its rivals sufficiently to attract large enough audiences to sustain itself. Second, news content quality increases with financial commitment. Third, as news content quality increases, the audience's utility derived from the content increases. Finally, as the audience's utility increases, the newspaper's performance (e.g., subscription and advertising revenue) improves.

As a test of the second step of the Lacy (1992) model, Lacy and Martin (2004) noted that financial commitment to newsroom staff size (i.e., numbers of reporters) is closely associated with news content quality. Several subsequent empirical studies have used a measure of such financial commitment (e.g., investments in the newsroom) as a surrogate for news quality, and examined its impact on subscriptions—the last step in the Lacy model. For example, Blankenburg (1989) showed with Inland Daily Newspaper Association Cost and Revenue data that a 1% increase in subscriptions was associated with a 1.16% increase in newsroom expenditures. Using the same data source, Cho, Thorson, and Lacy (2004) provided evidence that investing in the newsroom is correlated with more subscriptions, whereas Mantrala, Naik, Sridhar, and Thorson (2007) showed via a cross-sectional econometric model that, on average, a 1% increase in newsroom investment leads to a 0.5% increase in subscriptions.

We expect the positive short-term effect of newsroom investment on subscription revenue, as demonstrated in previous studies, will continue to exist in the print operation of a typical hybrid newspaper. We also expect that newsroom investments will have positive lagged effects on subscription revenues since news quality, like product quality, can be construed as a stock of goodwill that provides a newspaper with a differentiated competitive advantage yielding benefits over time. Hence, we hypothesize, consistent with Lacy's (1992) model, the following:

H1: An increase in newsroom investments (as a measure of content quality) results in an increase in (cumulative) subscription revenue.

### Subscription Revenue Mediation of Newsroom Investment–Advertising Revenues Relations

In recent decades, print newspapers in the United States have primarily relied on advertising revenue, contributing approximately 70% to 80% of total newspaper revenue (e.g., Mensing, 2007), to support the costs of doing business. Advertisers buy space in a newspaper primarily because they are interested in reaching consumers of their product who are also consumers (subscribers) of the newspaper's editorial content. It is reasonable to expect that advertisers' budget allocations to a newspaper will respond to variations in its newsroom investment as this investment affects paid subscriptions. In

other words, we expect that relations between newsroom investment and advertising revenues (offline and online) are mediated by the newspaper's subscription revenue.<sup>2</sup> In the following, we present our specific hypotheses with respect to the impact of subscription revenue on (a) offline ad revenue and (b) online ad revenue, with their supporting arguments.

We expect that increasing print subscriptions will induce more PAR because advertisers value the higher advertising efficiency (i.e., ability to access more "eyeballs" per advertising dollar; Warner & Buchman, 2004). Further, subscribers who pay for the newspaper (as opposed to getting it for free) are more likely to read it seriously and register advertising messages. Therefore, advertisers would be willing to pay a higher price, advertise more frequently, or both in a newspaper that has higher paid subscriptions. Available empirical evidence to date supports this hypothesis. For example, Blankenburg (1989) empirically showed that a 1% increase in subscriptions was associated with a 1.28% increase in advertising revenues. The positive impact of subscription revenue on offline advertising revenue has also been demonstrated in a cross-sectional setting by Mantrala et al (2007).

Next, we also expect increased subscription revenue leads to greater OAR due to offline and online product complementarity, as well as brand equity spillover effects from offline to online products. First, the available evidence from earlier empirical studies suggests that the newspaper's offline and online products have a more complementary than substitutable or competitive relation. Following up on earlier studies that showed online and print readerships had substantial overlap (Chyi & Sylvie, 2000), Chyi and Lasorsa (2002) conducted a survey of a one-newspaper city (Austin, Texas) and found that 83% of the online users of the local news site also read the print edition of the newspaper. Online readers were more likely to read the same newspaper's print edition, and vice versa. One possible reason for this dual channel patronage is that, although readers' needs vary across news consumption situations, readers prefer the same trusted sources and reporters of news. Thus, there exist offline–online cross-media demand synergies (e.g., see Naik & Peters, 2009). Moreover, online advertising is usually cheaper, quicker, and can be more targeted than print advertising. As technology improves, the impact of Internet advertising increases and is easier to measure than that from the offline medium (Cartellieri, Parsons, Rao, & Zeisser, 1997). So, online advertising is a way for advertisers to reach much of the newspaper's (presumably desired) audience accessible by offline advertising in a cheaper, quicker, and more targeted fashion. These attributes of the online medium are likely to boost online advertising dollars and revenues for print newspapers as subscriptions go up.

Second, there is some evidence that there are brand equity spillovers from the offline to the online version of the newspaper (Kolo & Vogt, 2004). A larger offline readership base may be taken by advertisers as a signal of the newspaper's high content quality (reliability and distinctiveness) and brand



image, which will attract more purely online readers as well. This is likely to stimulate them to allocate more ad dollars to the online version. Newspaper firms' sales forces are being trained do more cross-selling (i.e., highlight offline performance to generate more online ad sales). Recent studies in retailing support the cross-channel effect of prior offline brand image on online brand beliefs (Kwon & Lennon, 2009). A natural extension of this in the newspaper context is that the offline newspaper's brand image will spill over to positively draw online advertisers.

Finally, it is also possible that online advertising sales are directly tied to offline sales, perhaps by the newspaper offering the online ads at a discount for offline advertisers.<sup>3</sup> In summary, the previous arguments lead us to the following hypotheses:

- H2a: Subscription revenues will positively mediate the relation between newsroom investments and offline advertising revenue.
- H2b: Subscription revenues will positively mediate the relation between newsroom investments and online advertising revenue.

## METHOD

### Empirical Context

We obtained data from a privately held media company that has diversified holdings in newspaper and magazine publishing, as well as radio broadcasting. The company does not wish to disclose its name; however, we can offer some general details about the newspaper to place it in context. The newspaper is a medium-sized local U.S. newspaper with annual subscriptions of <85,000. It is a monopolist in its region with respect to content as it produces local and differentiated news content.<sup>4</sup> In terms of news content creation, the same newsroom staff writes news for the printed and online versions of the paper, which is a common practice in hybrid newspapers.

The data spans a 12-year (144 months) timeframe from January 1997 through December 2008. In 2008, the last year of the data period, the newspaper has about a 30% share of local advertising in its metro market, competing with other media such as radio, TV, yellow pages, and direct mail. The online version was available during the entire period of the data. In 2008, it received about four million page views per month. Our dataset contains information on monthly PARs and OARs and subscriptions. Next, we describe the measures used in the model.

### Measures

We operationalized the monthly revenues (in dollars) from print and online sources as the two focal dependent variables. We operationalized the

monthly subscription revenues as the potential mediating variable, and the monthly investments in newsroom as the focal independent variable. We also used subscription price and ad space sales force spending as control variables, affecting subscription revenue and advertising revenue, respectively.

### Data Characteristics

Table 1 provides the descriptive statistics. Note that in the data period, the newspaper's average monthly subscriptions are about 55,000, and the average monthly subscription revenue is about \$0.5 million. The average monthly PAR is \$2.2 million, and the average monthly OAR is about \$0.2 million. Average monthly investments in the newsroom and in the sales force are both at about \$0.3 million.

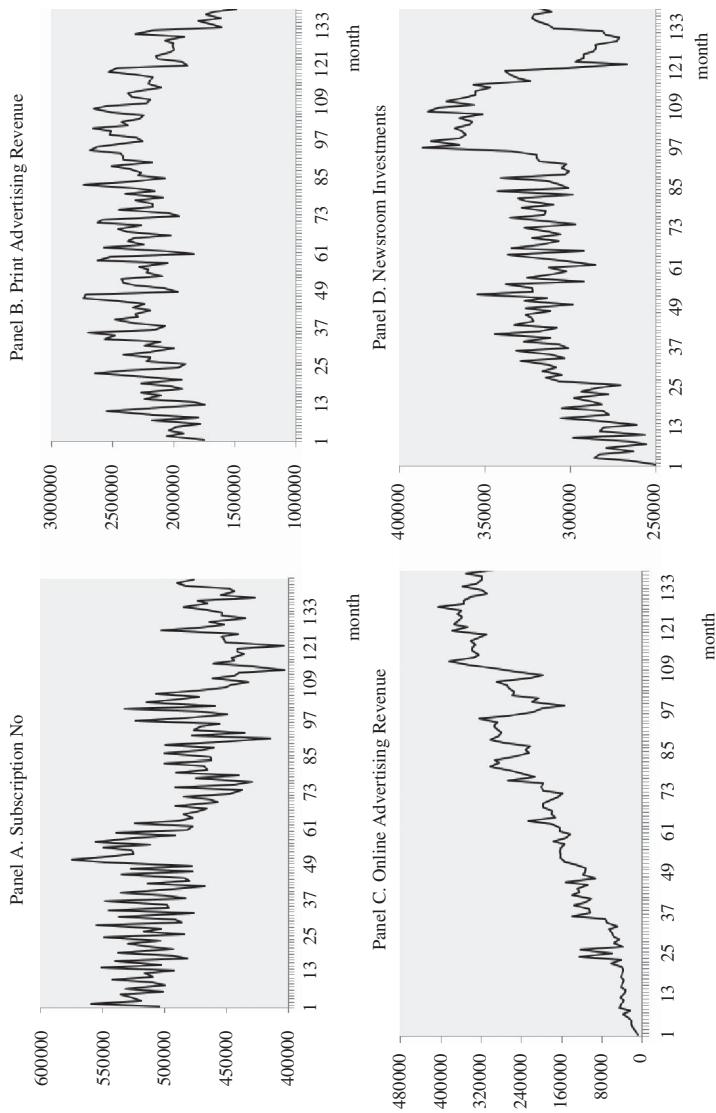
Figure 2 plots the three types of revenue and the newsroom investment over this 12-year period. Figure 2 shows a general decline in subscriptions and PAR over the 12 years (Panel A and Panel B, respectively). In contrast, OAR has been steadily increasing (Panel C). Both PARs and OARs show some seasonality, a common feature of newspaper advertising revenues. Finally, note that in the beginning of the 12-year data period, OAR was a negligible 0.5% of total advertising revenue. However, in 2008 it made up about 15% of total advertising revenue.<sup>5</sup>

### Market-Response Model

We build a market-response model to test our hypotheses. A market-response model is a parsimonious mathematical representation of a real-world system that (a) tests if investments have statistically significant effects on the outcome and (b) computes the magnitude of the effects (Hanssens, Parsons, & Schultz, 2001). Once estimated, it can be used to predict the influence of the hypothetical increase or decrease of a decision variable on the firm's outcomes (i.e., it enables "what-if analyses").

**TABLE 1** Descriptive Statistics (1997–2008)

Notation	Variable explanation	Monthly mean	SD
<i>SubNo</i>	Daily subscription	54,560.87	305.99
<i>p</i>	Subscription price per day (\$)	0.31	0.002
<i>Sub</i>	Subscription revenue (\$)	485,999.48	3,020.78
<i>PAR</i>	Print advertising revenue (\$)	2,201,863.83	24,013.60
<i>OAR</i>	Online advertising revenue (\$)	193,638.24	9,384.11
<i>News</i>	Newsroom investments (\$)	314,051.08	2,405.95
<i>Salesforce</i>	Sales force investments revenue (\$)	274,197.27	4,381.28



**FIGURE 2** Revenue and newsroom investment over 12 years of the data period (January 1997–December 2008).

We first focus on the factors influencing subscription revenues (i.e., the left half of Figure 1). We specify the link between newsroom investments and subscription revenues as follows:

$$Sub_t = \alpha_0 + \alpha_1 price_t + \alpha_2 t + \sum_{i=0}^n \alpha_{i+3} Ln(News_{t-i}) + \varepsilon_{1t}. \quad (1)$$

In Equation 1,  $Sub_t$  describes the print subscription revenue obtained by the newspaper in period  $t$ , and  $News_t$  describes the investments made by the newspaper in the newsroom in period  $t$ . We use the natural logarithm of newsroom investment to reflect diminishing returns to investments (e.g., Doyle & Saunders, 1985). In addition, we allow for the long-term impact of the newsroom investment on the subscription revenue by allowing contemporaneous ( $i = 0$ ), as well as lagged influences ( $1 \leq i \leq n$ ) of the newsroom, investment on subscription revenue. The number of lags needed ( $n$ ) can be determined based on model fit indexes (Pauwels, Silva-Risso, Srinivasan, & Hanssens, 2004). When  $i = 0$ , the term  $News_t$  incorporates a contemporary effect of newsroom investment on  $Sub_t$ . When  $i \geq 1$ , the terms  $News_{t-i}$  incorporates the lagged effect of newsroom investment on  $Sub_t$ . The parameter  $\alpha_3$  determines the effectiveness of current newsroom investments in generating subscription revenue. The terms  $\alpha_4, \alpha_5 \dots \alpha_{n+3}$ , when present, determine the effectiveness of lagged newsroom investments in generating subscription revenue. As per H1, we expect that with increased newsroom investment, subscription revenue increases. Therefore,  $\alpha_3, \alpha_4 \dots \alpha_{n+3}$  are expected to be positive and significant.

We control for the subscription price (*price*) because it is an important determinant of subscription revenue (Blair & Romano, 1993). The coefficient capturing the effect of price is  $\alpha_1$ . We also include a time trend variable (measured as the time period at which data is observed with  $t = 1, 2, \dots, T$ , where  $T$  is the last observed time period) as a control variable. The trend coefficient  $\alpha_2$  will subsequently capture an underlying direction (upward or downward) in a time series. The trend component represents a parsimonious way to capture the myriad macroeconomic effects other than newsroom investments that might be impacting subscription revenue. Finally,  $\alpha_0$  represents the intercept in the equation, and  $\varepsilon_{1t}$  captures a normally distributed error term pertaining to Equation 1.

Next, we focus on the factors influencing PARs and OARs (i.e., the right half of Figure 1). First, we specify the link between the mediating variable (i.e., subscription revenue) on PAR. Second, we specify the link between the mediating variable (i.e., subscription revenue) on OAR. Note that because we specify subscription revenues as mediating the relation between newsroom investments and advertising revenues, in the empirical analysis, we will test for the direct relation between newsroom investments and advertising revenues. The equations are given as follows:

$$PAR_t = \beta_0 + \beta_1 Sub_t + \beta_2 Ln(Salesforce_t) + \sum_{i=1}^m \beta_{i+2} D_{it} + \varepsilon_{2t} \quad (2)$$

$$OAR_t = \gamma_0 + \gamma_1 Sub_t + \gamma_2 Ln(Salesforce_t) + \gamma_3 t^2 + \varepsilon_{3t}. \quad (3)$$

In Equation 2,  $PAR_t$  is the PAR obtained by a newspaper in period  $t$ . Similarly, in Equation 3,  $OAR_t$  is the OAR obtained by a newspaper in period  $t$ . We expect that with increased subscription revenue and both PARs and OARs would increase. Therefore, we expect  $\beta_1$  and  $\gamma_1$  in Equations 2 and 3, which capture the influence of subscription on PARs and OARs, respectively, to be positive and significant.

We control for the firm's investment in the sales force directed at generating both kinds of advertising revenue. Smith (1998) showed that the newspapers' sales efforts tend to increase advertising revenue. An increase in this important marketing investment allows firms to make changes such as increasing the sales force size, providing more or better training for the sales force, or hiring more experienced salespeople (Albers, 2002; Mantrala, 2002; Warner & Buchman, 2004). Furthermore, increase in sales force investment should also increase OAR. As already noted, many ad space sales forces are, in fact, attempting to sell both offline and online advertising opportunities to their clients. The coefficients capturing the influence of the sales force on PARs and OARs are denoted by  $\beta_2$  and  $\gamma_2$ , respectively. Similar to newsroom investments, we take the logarithm of sales force investments to reflect that this marketing investment has diminishing returns.

Furthermore, trend or seasonal components are included. The selection of such components is determined by data characteristics and model fit indexes. In Equation 2, we control for seasonality effects in PAR through the use of dummy terms  $D_{it}$  (where  $1 \leq i \leq m$ ) and their associated coefficients  $\beta_{i+2}$ . Here,  $m$  is the number of dummy variables needed to capture the seasonality in the data;  $m$  is determined by data characteristics. The choice of dummy terms is idiosyncratic to the data setting. For our specific time series dataset and analysis (as shown subsequently), two dummy terms are needed; therefore,  $m = 2$ . We control for seasonal increases in advertising revenue associated with the "back-to-school" and the Christmas season (when  $i = 1$ ,  $D_{1t} = 1$  for the month of August, and 0 otherwise; when  $i = 2$ ,  $D_{2t} = 1$  for the months of November and December, and 0 otherwise). In Equation 3, we control for the exponential growth in OAR with a quadratic trend term  $t^2$ . Finally,  $\beta_0$  and  $\gamma_0$  represent the intercepts, and  $\varepsilon_{2t}$  and  $\varepsilon_{3t}$  are normally distributed error terms pertaining to Equations 2 and 3, respectively.

RESULTS

Model Estimation

The goal of the empirical analysis is to estimate Equations 1 through 3 pertaining to subscription revenue, print (offline) advertising revenue, and OAR, respectively. Note that the subscription revenue (*Sub*) is a dependent variable in Equation 1 and also an independent variable in Equation 2 and Equation 3. Thus, Equations 1 through 3 are a recursive system of equations. Because the error terms in Equations 1, 2, and 3 may be correlated, we need an estimation method that explicitly accounts for the interdependence to avoid biasing our inference about the mediating effects (Shaver, 2005). One approach that addresses this issue is to estimate the system as a whole via two-stage least squares (2SLS; Greene, 2003; Shaver, 2005). Accordingly, we use the 2SLS procedure for estimation.

Model Selection

We present the results of the 2SLS estimation in Table 2. Before we describe the results of our hypothesis tests, we summarize the analyses we carried out to validate the selected model. First, the model fit ( $R^2$ ) for the *subscription revenue equation* is high (83.2%). For comparison purposes, we

**TABLE 2** Estimation Results

Subscriptions Equation	
Intercept ( $\alpha_0$ ) <sup>a</sup>	-47,568.74 (22,818.40)**
Price of subscription ( $\alpha_1$ )	-44,357.40 (6,457.09)***
Trend ( $\alpha_2$ )	-80.34 (3.59)***
Ln(Newsroom <sub><i>t</i></sub> ) ( $\alpha_3$ )	4,205.17 (2,235.42)*
Ln(Newsroom <sub><i>t-1</i></sub> ) ( $\alpha_4$ )	5,403.88 (2,181.34)**
Proportion of variance explained ( $R^2$ )	83.2%
Print Ad Revenue Equation	
Intercept ( $\beta_0$ )	-1.397E + 07 (1,239,487.02)***
Subscription revenue ( $\beta_1$ )	68.84 (4.29)***
Log(Sales Force Investments) ( $\beta_2$ )	975,721.40 (87,287.8)***
August dummy ( $\beta_3$ )	142,190.21 (47,336.66)***
November–December dummy ( $\beta_4$ )	295,007.6 (35,275.32)***
Proportion of variance explained ( $R^2$ )	71.8%
Online Ad Revenue Equation	
Intercept ( $\gamma_0$ )	-2,051,788.91 (37,275.32)***
Subscription revenue ( $\gamma_1$ )	11.66 (3.09)***
Log(Sales Force Investments) ( $\gamma_2$ )	117,838.30 (34,967.17)***
Time <sup>2</sup> ( $\gamma_3$ )	19.88 (2.27)***
Proportion of variance explained ( $R^2$ )	84.6%

<sup>a</sup>Parameter estimates and standard errors in parentheses.

\* $p < .10$ . \*\* $p < .05$ . \*\*\* $p < .01$  (two-tailed).

also estimated a model with (a) only the intercept and a trend component; (b) the intercept and a trend component, price, and the contemporaneous effect of newsroom investments; and (c) a full model, which includes the control variables contemporaneous and lagged effects of newsroom investments. In analyses not reported here but available from us on request, we found that the full model best fits the data. In addition, after testing the effect of up to six periods of lagged effects of newsroom investments, we found that only the one-period lagged effect is significant on subscription revenue. Therefore, the final model includes only a one-period lagged effect of newsroom investments.

Next, we present the results of the PAR and OAR equations. Using a similar procedure to the one used in the subscription revenue model, we first estimate baseline models with only trend or seasonal components, and then add the influence of subscription revenue and sales force investments. The addition of the subscription revenue and sales force investment variables improved the variance explained of both the print advertising model and the online advertising model. Therefore, the proposed models are retained. The final models explain 71.8% of variance in PAR and 84.6% of the variance in OAR. In the following, we discuss these estimation results.

## Estimation Results

*Effects of control variables.* The effects of the control variables in the subscription revenue equation are as follows: There is a negative and significant time trend term ( $\alpha_2 = -80.34$ ,  $p < .01$ ) and a negative and significant price coefficient ( $\alpha_1 = -44,357.40$ ,  $p < .01$ ). Intuitively, the negative coefficient for the trend term reflects the declining subscription revenue over the data period. The negative term on subscription price is expected—as price goes up, those readers who are price sensitive may cancel their subscriptions.

With regard to the effects of the control variables in the advertising revenue equations, first, we find that PAR exhibits seasonal increases in August and November through December ( $\beta_3 = 142,190.21$ ,  $p < .01$  and  $\beta_4 = 295,007.6$ ,  $p < .01$  in Table 2), and OAR exhibits a quadratic growth over time ( $\gamma_3 = 19.88$ ,  $p < .01$  in Table 2). Also, sales force investments positively impact both offline and OARs ( $\beta_2 = 975,721.40$ ,  $p < .01$  and  $\gamma_2 = 117,838.30$ ,  $p < .01$  in Table 2).

*Hypotheses testing.* We first test H1 (i.e., the influence of newsroom investments on subscription revenue). The estimated parameters for the explanatory variable *News* in the subscription revenue equation shows that as newsroom investments increase, subscriptions increase. This is true with respect to both the contemporaneous and lagged influences of the newsroom investment ( $\alpha_3 = 4,205.17$ ,  $p < .10$ ;  $\alpha_4 = 5,403.88$ ,  $p < .05$ ). This indicates support for H1.

Next, we test whether subscription revenue mediates the relation between newsroom investments and advertising revenues. Using the procedures in Barron and Kenny (1986) and Shaver (2005), we first test the direct effect of newsroom investments on offline and OAR without the influence of subscriptions revenues. We find that both these effects ( $\beta = 1,126,057.5$ ,  $p < .08$  on PAR;  $\beta = 61,484.5$ ,  $p < .05$  on OAR) are positive and statistically significant. Second, we find that incorporating the influence of subscription revenue results in a significant increase in PAR (Table 2;  $\beta_1 = 68.84$ ,  $p < .01$ ), as well as OAR (Table 2;  $\gamma_1 = 11.66$ ,  $p < .01$ ). Third, we find that the effect of newsroom investments on PAR and OAR is not significant when we account for the positive effect of subscription revenue on PAR and OAR, respectively ( $\beta = 418,446.6$ , *ns* on PAR;  $\beta = 63,279.2$ , *ns* on OAR). Thus, we find support for H2a and H2b (i.e., subscription revenue fully mediates the relation between newsroom investments and PAR and OAR, respectively).

### Robustness Checks

Using the Durbin–Watson statistic, we checked for the presence of autocorrelation in errors, and did not find evidence for the same. We also checked for endogeneity of prices by the method suggested by Sudhir (2001, p. 255) and found no evidence for the same.

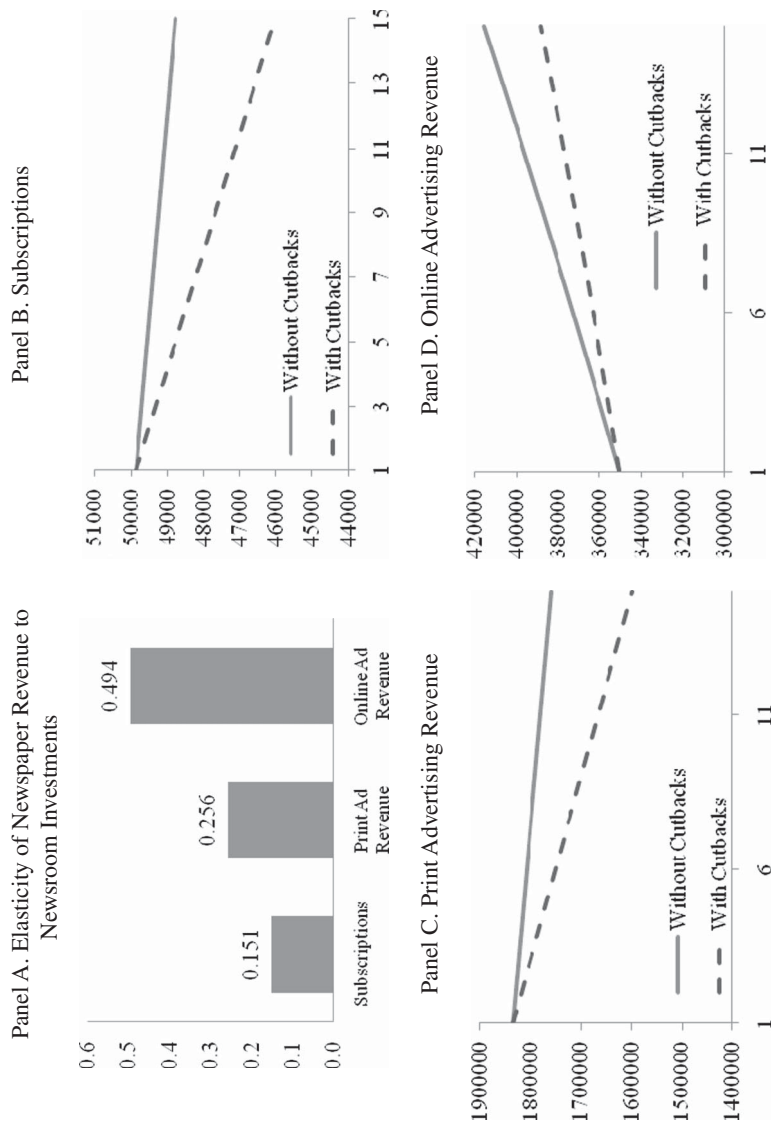
### Additional Analyses

*What is the dollar impact of newsroom investment on newspaper revenue?* To predict the dollar impact associated with changes on newsroom investment, we use the parameter estimates obtained as in Table 2. First, we take the mean value of the newspaper's investment and revenue in the data period. Then, we introduce a hypothetical increase of 1% in newsroom investments, and predict the impact of such increase on newspaper revenues. The results show that at the mean levels of current revenues, a 1% increase in newsroom investments will lead to increases of 0.151%, 0.256%, and 0.494% in subscription, PARs, and OARs, respectively (Figure 3, Panel A).

Two points are noteworthy. First, the newsroom investment impact on advertising revenue is indirect (i.e., through increased subscriptions and increased interest from advertisers to spend advertising dollars in the newspaper). Second, the impact of newsroom investments on OAR is higher than on PAR, suggesting that content is valued highly by online advertisers for its ability to generate subscriptions. This shows high return on investments (ROI) from product quality—a well-established result in marketing (e.g., Rust, Lemon, & Zeithaml, 2004).

What are the long-term effects of newsroom cutbacks? Faced with troubling economic times, newspapers have reacted to competitive threats





**FIGURE 3** Elasticity and sensitivity analysis (color figure available online).

with cost control measures, including sharp cutbacks in newsroom staffing, employment, and investments—the very core of *journalistic quality* (Rosenstiel & Mitchell, 2004). According to the 2010 State of the News Media Report (PEJ, 2010), more than one half of U.S. newspapers are cutting back on their newsroom staff. Is a newsroom cutback the optimal managerial practice when newsroom investments, in fact, help grow revenues?

To understand the impact of newsroom investment cuts on all three revenue streams, we use the parameter estimates to simulate the effects of a continued reduction of newsroom resources over an extended period of time (14 months of monthly newsroom investment cuts of 2%) while holding all other variables constant. Panels B, C, and D in Figure 3 show the results. In the current economic conditions, such newsroom investment cuts will result in a 2.77%, 4.48%, and 3.54% drops in subscription, PAR, and OAR, respectively, after controlling for the declining trend and seasonality of the business. Note that a newsroom cut negatively affects both PAR and OAR. Therefore, the print and *emerging* hybrid paper will be in peril if newsroom cutbacks continue.

In summary, the estimation results provide robust empirical support to the idea that newsroom investments have a short-term (contemporaneous) and long-term (lagged) influence on subscriptions revenue, and that subscription revenue increase will drive up both offline and OARs. Our model fits the data well ( $R^2$  of 83%, 72%, and 85%, respectively, for the 3 equations). We perform analyses to determine the long-term impact of investment cutbacks on PAR and OAR, mediated by subscription revenue.

## DISCUSSION

In this article, we develop and test theory-based hypotheses about the impact of newsroom investments on financial performance of hybrid newspapers. Our hypotheses are supported and have important implications for newspaper company management and theory.

### Implications for Theory

We discuss two key theoretical contributions of our work in the following.

*Financial commitment model.* Building on Lacy (1992), Lacy and Martin (2004) tested the second step of the four-step financial commitment model, and noted that financial commitment to newsroom staff size (i.e., numbers of reporters) is closely associated with news content quality. Our research provides empirical tests of the third and fourth step of the Lacy model (increased news quality leads to higher audience utility, which leads to better financial performance of the newspaper). We break down the “financial performance” concept into three parts:

subscription revenue, OAR, and offline advertising revenue. Further, we empirically examined not only the relation between newsroom investment and financial performance, but also the relation between subscription revenue and the two types of advertising revenue. This provides a more detailed and clear picture of the last part of the Lacy model. The results provide evidence supporting the tenet of the financial commitment model in the growing world of hybrid newspapers (i.e., newsroom investments are a key ingredient to the financial success of the firm, even with the growth of online news providers and competition for the online medium). In particular, we demonstrate that newsroom investments generate offline subscriptions, which mediate the relation between newsroom investments and both online and offline advertising revenues. The quantitative relation between newsroom investments and online performance represents a more robust test of the financial commitment model's tenets of competitive differentiation through news quality since the online space represents a more competitive space for local daily newspapers.

*Managing dual channels.* As firms add new channels through which their products are offered, there are always questions of whether and when a new channel will replace the old one or whether both channels can coexist and flourish. In the case of hybrid newspapers, although PAR is on the decline, it still represents the dominant source of revenue for most local dailies in the United States (PEJ, 2010). At the same time, online newspaper advertising revenues are growing, albeit more slowly than envisaged. For the newspaper we investigate, our results suggest that it should continue to invest in the newsroom and the print product (i.e., the newspaper should capitalize on the monopolistic status of its print product while slowly transitioning to becoming an "online dominant" medium). It is interesting to note, however, that our analysis shows that there are important cross-media synergies (i.e., investment in one channel has a positive impact on the output of that channel, which, in turn, has a positive impact on the output of the other channel). Such cross-media synergies have not been investigated in the journalism and communications literature. Ours is a first step in this direction. We also do not rule out the possibility that online advertising sales are directly tied to offline sales, perhaps by the newspaper offering the online ads at a discount for offline advertisers. In summary, building models for optimizing multimedia news channel investment strategies considering these cross-effects appears to be a rich avenue for future research.

### Implications for Managers

Jack Cox (2007), the Chief Executive Officer of the Foundation of American Communications, stated that content is going to remain important for online newspapers and "knowledgeable reporters and editors remain the key to

the future of media” (p. 13). However, recent developments such as the huge layoffs of journalists suggest that this advice is being ignored by many companies chasing new online revenues. Our research provides hard and, hopefully, more convincing evidence of the impact of newsroom investments on both offline and OARs. In particular, our findings answer several questions that should be of great interest to newspaper management. First, we find that newsroom investments have the ability to generate not only subscription revenue, but also offline and OAR, through the key mediating influence of subscriptions. This provides evidence for the idea that even in tough economic times, investments in content provide a way to generate performance. Second, we find that investments in the newsroom do have a substantial impact on OARs, contrary to some current thinking on the part of practice. Third, our results show that print and online revenues are relatively inelastic (elasticity  $<1$ ) to the current period’s newsroom investments. If this is also the case at other newspapers, this could explain why managers do not easily discern the strong connection between newsroom investment and revenues. Hence, managers should employ longitudinal data to test their ROI and employ a long-run approach in assessing the effectiveness of investments.<sup>6</sup>

### Limitations and Directions for Future Research

As with all research, this research has several limitations that also offer opportunities for future research. First, similar to the shortcomings of earlier articles testing the financial commitment approach, our study also does not measure market conditions. Future research can study the impact of market conditions like competitive intensity and how they affect investment choices in hybrid newspapers. Second, our study represents a single newspaper, and future research should validate our findings on a larger set of newspapers. Third, our work is centered in the United States. Further insights on the relations between newsroom investments and online performance may be uncovered by focusing on other geographic markets (e.g., Europe and developing economies).

In conclusion, we agree that the current economic situation for newspapers does not paint a cheerful picture. PARs and subscription revenues are plummeting, and it is not clear what the online business model might bring. With the help of an econometric model, we find that the basic success of the “clicks” model depends on the “bricks” of the newspaper (i.e., its newsroom). Specifically, although news gathering and news production can be an expensive part of the newspaper business, they are also creators of the newspaper’s brand equity and separate newspapers from competitive entities, like blogs. Therefore, continued investments in the newsroom represent a potentially successful way for a newspaper’s foray into the digital world.

## ACKNOWLEDGMENTS

This research was partially supported by the Reynolds Journalism Institute at the University of Missouri. The research was done while Yihui (Elina) Tang was a Donald W. Reynolds doctoral fellow.

## NOTES

1. Some of that loss reflects readers opting to get news on the Web instead of dropping their subscriptions.

2. In our subsequent analysis, we will empirically examine if the relation between investments and the newspaper's offline and online revenues are mediated by subscription revenue using conventional methods

3. We thank an anonymous reviewer for pointing this out.

4. The fact that the newspaper is a local monopolist implies that there are no other print newspapers in its region of operation. It does not mean that there are no substitutes available to readers or advertisers.

5. In Panel D of Figure 2, the decrease in newsroom investment around January 2007 was due to cutbacks arising from management changes and decisions in response to the financial status of the holding company.

6. We thank an anonymous reviewer for this observation.

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