

## **Revenue Streams and Digital Content Providers: An Empirical Investigation**

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### **ABSTRACT**

There is tremendous confusion among practitioners regarding the relationship between various potential online revenue streams and the performance of a firm's online efforts. Such questions are of particular interest to firms that provide information goods, due both to the unique characteristics of such goods and the fact that such products are increasingly offered free by online providers. Using the magazine publishing industry as a context, this paper provides an empirical exploration of various revenue streams and relates them to manager assessment of the performance of the firm's online efforts. These results present, to the authors' knowledge, the first empirical exploration of the link between the performance of an online effort and various revenue streams pursued.

### **KEYWORDS**

Electronic Commerce, Information Goods, Revenue Streams, Internet Business Models, Empirical Research

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## **INTRODUCTION**

Internet technology continues to advance at a remarkable pace, creating new opportunities and challenges for providers of information goods. Recent research has begun to examine the unique nature of information goods as well as competition in information goods markets [2; 3; 11; 32; 34]. However, empirical assessments of the existing competitive environment remain limited and have largely focused on software markets [5; 13]. This paper examines a specific subset of firms that provide information goods, magazine publishers. This market is particularly interesting, since it represents a classic 'atoms-to-bits' shift [27]. Firms have traditionally provided product in physical form, but are now actively pursuing digital options. The environment is filled with uncertainty as firms plunge forward into an unknown where business models and revenue streams are unclear and profitability is questionable. Delay may mean peril as fast-movers obtain financing, attract talent, establish brand, and cement customer loyalty. A continuous shift by consumers away from time spent with traditional content sources and toward new information sources is underway. An understanding of various revenue stream options available is critical as firms faced with resource constraints consider whether and how to leverage options created by technology. Yet existing theory and practice does not provide clear guidance on appropriate revenue generating options available to new media content providers.

The results of the survey are presented, providing new insights for both researchers and practitioners. This work analyzes the early efforts of magazine publishers that are actively providing online content. Particular attention is paid to the relationship between the pursuit of various revenue streams and the impact of these streams on perceptual measures of firm performance.

## **THE SHIFT TO NEW MEDIA**

We are in the midst of a shift in consumer attention that is dramatically impacting content providers. In increasingly greater numbers, consumers are seeking content online at the expense of time spent in off-line venues, such as print publications. Intelliquest research conducted for IDG in late 1996 showed that 11

percent of computer-related U.S. magazine readers read less due to Internet information, a remarkable figure at this time considering the infancy of the Web. And it seems that this trend has continued and is reflected across content categories. In May 1997, the Audit Bureau of Circulation reported a broad decline in newspaper readership for most of the nation's largest newspapers. Another study of 1,527 Web users showed that 40 percent of users read newspapers online, a figure that if extrapolated at the time would be equivalent to about 14.4 million U.S. readers [37]. Studies by the Pew Research Center, have also found that in 1998, one in five people use the Internet at least once a week to satisfy their appetite for information, and by 1999 this number had doubled [30; 31].

While many publishers feel it is a competitive necessity to have a web presence, effectively leveraging this presence remains elusive even among large firms with strong brands. NewsCorp CEO Rupert Murdoch has lamented the difficulty in crafting new media strategies, stating "We have not found the formula on how to make money yet.". Many of Murdoch's peers have also clearly struggled with their online offerings. For example, Time-Warner spent over \$50 million building and promoting the Pathfinder site, only to take the service down in Spring 1999. Subsequently, the firm has begun to experiment with charging for the Internet archives of magazines like Fortune. Microsoft's entirely-online Slate venture has also repeatedly announced it would move from free to fee content, only to back off several stated deadlines. NewCentury Network represents another failure among traditional media players. Started with \$1 million each from Knight-Ridder, Tribune, Times Mirror, Advance Publications, Cox Enterprises, Gannett, Hearst, Washington Post, and New York Times, NewCentury was created to link 140 newspapers online and create a rival network to avoid losing customer and advertisers to the likes of AOL and Microsoft. Yet despite the strong backing of well-known firms with extensive publishing assets, the venture closed on March 10, 1998.

Despite these rather public failures, some apparent successes have emerged as online operations garner readership, generate revenue, and grow in popularity. Publications as varied as Consumer Reports and the Wall Street Journal enjoy large, loyal online subscriber bases. And generating a large subscriber base does

not seem limited to established brands. According to the November 1999 SEC filings of Internet-only TheStreet.com, the firm had attracted over 94,000 subscribers paying \$9.95 / month or \$99.95 / year.

[ --- insert Table 1 about here --- ]

Success may not be described solely in terms of paying subscriber-base. The New York Times Syndicate reported \$25 million in revenue during fiscal year 1999 despite largely free-content offerings. While this pales in comparison to the \$3 billion in revenue for the firm's overall operations, new media enterprises such as the firm's Boston.com site average in excess of 700,000 unique users a month, representing 16 percent of metro Boston's web surfers. Also consider the Internet arm of publisher Ziff-Davis. The firm's properties ranked as the leading online news site and were first profitable in the fourth quarter of 1997.

The varied experiences of the firms cited above only add to confusion. Online offerings may rely on a variety of revenue streams, including banner ads, subscriptions, and affiliate programs, however it has been suggested that, "none of them really know which, if any of these variables will push them into the black" [21]. Using the magazine publishing industry as a context, this study attempts to distill effective strategies from this confusion by examining the relationship between various revenue streams and online efforts.

## **INFORMATION GOODS**

Ubiquitous networking and low-cost computing present an environment where products that were typically distributed as physical goods can now be delivered in entirely digital form. This shift has profound implications on the cost structure and strategies of firms that are in the business of providing information goods.

Information goods typically have high fixed costs and low or virtually non-existent marginal costs. Put more simply, "information is costly to produce but cheap to reproduce" [36]. Once the first copy of an

information good has been generated, most costs are sunk and can not be recovered. However, there is an unlimited capacity for the reproduction of identical copies.

Referring to classical strategy theory [33], Shapiro and Varian highlight two approaches for firms providing information goods – differentiation and cost leadership. Firms must either offer a unique resource and charge for it based on the value that is delivered to consumers, or firms must become a price / cost leader. The rapid reproducibility and information-rich nature of information-based goods also lends to their potential mass-customization and hence a differentiation strategy [14]. For instance, delivering an electronic newspaper tailored to the interests of an individual reader need not be more costly than delivering the same copy to all subscribers [1]. The implications for Internet-enabled mass-customization are surveyed by Chatterjee and Sambamurthy [7]. Web-enabled customization of products and services can enable companies to improve their quality of customer service and create switching costs. The collaborative capabilities of the web enable joint product development and testing, enhances the efficiency of such activities, and increases the probability of creating innovative and higher-quality products and services.

Additionally, Web-based transaction processing capabilities bring about efficiency-related benefits by reducing transactional costs, enhancing operational efficiency while transforming the way that business is conducted. Markets for information goods are being significantly impacted by the Internet, as the medium alters the dynamics of distribution, time, and transaction. Instant delivery of information goods speeds the process of transaction, logistics, and settlement.

New opportunities exist for repackaging content through strategies such as bundling, licensing, subscriptions, rentals, versioning and differential pricing, and per-use fees. These schemes can be thought of as either aggregating or disaggregating information goods along various dimension. In an era of ubiquitous communications and nearly limitless, free information availability, the information provider adds value by locating, filtering, and communicating what is useful to the consumer. This suggests the value of an aggregation or bundling strategy. Aggregation of information goods can result in higher profits

for sellers as well as a socially desirable wider distribution of the goods. This results from the ability of aggregation to change the shape of the demand curve faced by the sellers to one that is easier to exploit. Economies of aggregation may be leveraged when marginal costs are very low, as is the case for electronically delivered information goods. High marginal costs render large-scale aggregation unprofitable, which may explain why it is more common for Internet publishing than in publishing in other relatively high-cost media. Aggregator advantage vis-à-vis sellers of separate goods is strengthened by a lower per-unit amortized transaction cost. Firms may also reap advantages via exploiting price discrimination opportunities [35]. Firms may be able to extract higher rates for consumers who suffer from high search costs, associated high opportunity costs, and/or time constraints. Such time-sensitive restrictions may be thought of as 'perishable', or suffering from rapid time-based depreciation.

The information product of publishing companies is what economists refer to as an experience good. That is, if a fee is charged, then users must pay for a product before they are aware of the utility that this product or service can provide. Most media companies overcome this problem through branding and reputation, suggesting new brands may be particularly challenged in obtaining an online following. The reputation of an organization that generates information, such as a newspaper or magazine, may be inherited by the online services offering aggregated or syndicated content. The positive reputation effect may be particularly strong for those firms seeking to establish their own brand beachhead in cyberspace. This may create a positive brand image due to increasing returns, generating an advantage that may not be neutralized easily by competitors [22].

The migration of consumers to new media, the shifting expectations of consumers, the possibility to market to an increasingly diverse and stratified customer base, and the tangible differences of entirely digital vs. physical products, create a multitude of options for revenue generation. Many firms have sought to earn revenue from alternate channels – not from the user's initial purchase of the product, but through the sale of advertising, additional products or services, promoting subscriptions to print versions or special content, or funneling customers to a third party e-commerce site for a cut of the sale. However, providers of digital

information goods are unsure how to price, package, and market their products and are struggling with determining the appropriate revenue model mix.

## **JUSTIFICATION FOR THE PURSUIT OF REVENUE STREAMS**

This study focuses on the relationship between the pursuit of various revenue streams and the senior manager's evaluation of the performance of the firm's online efforts. In order to investigate this relationship, several revenue streams common among Internet-based content providers are explored, including 1) online advertising, 2) subscription fee for online content, 3) online ordering of print publication, 4) syndication / revenue sharing with online services (e.g. America Online, etc.), 5) per-unit charges for online content, 6) online sale of non-content merchandise and services, and 7) affiliate programs (e.g. shared profits from directing buyers to an e-commerce storefront). Each tactic is discussed below, along with theoretical justifications for pursuing each stream.

### **Online Advertising**

One of the most widely discussed revenue streams for providers of information goods is online advertising. Online advertising allows for a provider of information goods to pursue a low-price strategy, many times providing product for free. One rationale for the free-pricing tactic is supported by the economic perspective that free information goods are essentially priced at their marginal cost. Since digital products do not suffer from the marginal costs or advertising restrictions of print counterparts, adding advertising offers a revenue stream that also benefits from the economics of information goods.

Online advertising is seen as a vital revenue source as consumers continue to demand free content. There is increasing evidence that consumers have grown accustomed to free online content and are substantially less willing to pay for goods when in many cases free substitutes are available elsewhere. Between November 1994 and May 1996, the number of users who said they would not pay for Internet content rose from 21

percent to 65 percent [38]. The primary reason cited for this unwillingness to pay for content is choice: 44 percent cite the ability to access free content on other sites. Consumers also feel they're already being asked to pay for Web access, so 30 percent deem site fees as a sort of double-tariff. Offering goods for free not only reflects the marginal cost of the product, free products mimic in the extreme price reductions that have been demonstrated in physical goods purchased from online vendors vs. those of their off-line competitors [6].

Despite a seemingly widespread reliance on advertising as a revenue generator, many issues with the advertising model remain. While the economic perspective sets the marginal cost of an information good at zero, this view tends to discount the skyrocketing costs of developing and maintaining a strong web site. A 1997 study by Forrester Research claimed that content sites spent nearly \$3.1 million on operations, three times what it cost them in 1996 [28]. The online edition of Editor and Publisher stated that Knight-Ridder's 32 web sites cost the firm \$27 million, while generating only \$11 million in ad sales. The Tribune Co. received only \$12 million in online revenue against roughly \$30 million in expenses. The NY Times has lost between \$12 and \$15 million.

And despite the removal of wildly fluctuating commodities from the marginal cost equation, critical expenses for online content providers are likely to be higher than their offline counterparts. These figures are most evident in salary discrepancies. More than half the cost (54.8 percent) for online newspapers is accounted for by salaries [26]. And while entry-level reporter jobs avg. \$17,000-\$19,000, the figure for online reporters is \$27,000-35,000 [23]. The San Jose Mercury News and other publications with business and technology-focused staff have seen high turnover as employees leave for startup ventures they are covering. Also, some reports suggest that only a select few firms may be benefiting from online advertising dollars. According to the IAB's estimates, of the \$1 billion spent on online advertising in 1997, AOL and Yahoo took 55 percent, news and information sites captured 7 percent at best, and entertainment sites received only 3 percent.

On the controversial point of the benefits of online advertising, this first hypothesis suggests that the aggregate benefits of the online advertising strategy will be significant.

*HYPOTHESIS 1: There is a positive relationship between the performance of an online effort and the firm's sale of online advertising space.*

### **Subscription fee for online content**

Subscriptions are a typical revenue stream pursued by most print-based publications so it is only natural that many firms would attempt to transfer this revenue stream into the virtual world. In 1996, Jupiter Communications estimated that Internet subscription revenues amounted to \$120 million, however aggregate data on the growth of Internet subscription revenues and a sub-categorization of such efforts are scarce.

Additional background on examples introduced earlier underscore potential benefits of offering fee-based subscriptions to online content. The Wall St. Journal Interactive Edition appears to have leveraged brand and content from the firm's print-based publication to develop a successful web-based subscription franchise. With 300,000 subscribers in early 1999, the WSJIE touts itself as the largest paid-circulation site on the Web. Boasting similarly high subscription numbers is Consumer Reports Online. By mid-1999, the site has lured more than 300,000 subscribers, each of whom pays \$24.95 per year for full access to the site. Most significantly, the majority of Consumer Reports online subscribers appear to be new customers, with only 8 to 10 percent holding both online and print-based subscriptions to the magazine [15].

While some firms have managed to develop a substantive base of paying online subscribers, many firms have struggled to successfully craft a comparable strategy. Despite the apparent success of the firms cited above, creating a successful subscription offering has been a challenge for many firms. Microsoft's online political magazine Slate.com has made several announcements that it is going to move from free to subscription-based services, however as of mid 2000, the firm had yet to have successfully switched its

subscriber base. Time-Warner's Pathfinder site made similar claims [26] yet the service was disbanded before making the switch. User surveys suggest there are fewer customers willing to pay for services when free substitutes seem readily available [16]. This trend is also reflected in the experience of Individual's NewsPage service, which saw a drop in subscribers from 80,000 to 15,000 just one month after a free-trial launch was converted into a monthly fee-based service. And despite the success of subscription-based Wall Street Journal Interactive, the free New York Times web site boasts more than 23 times more subscribers. A key question is, can firms garner greater benefit from a smaller paying population than from a larger base attracted by free offerings?

In order to test whether magazines that charge for online subscriptions see greater benefits from their online service than those who offer free content, the second hypothesis is offered. Here it is assumed that providing a subscription to an online service (separate from a print-subscription) will be positively related to performance of the magazine's online efforts.

*HYPOTHESIS 2: There is a positive relationship between the performance of an online effort and the offering of fee-based subscriptions to the firm's online services.*

### **Online ordering of print publication**

While the ability to search for and immediately retrieve digital works offers appeal in certain usage contexts, print-content continues to offer certain benefits over online content such as easier scanning and superior serendipitous exploration [26]. As such, it is logical to assume that there will be a demand for paper-based publication for the mid-term future.

As demand for printed works remains, providing free content may be a loss-leader strategy. Content is the same, but users pay for the convenience and efficiency of a physical product. While organizations may fear that a free or low-cost product may cannibalize print offerings, there is reason to believe that online versions may generate interest in print offerings. Many firms have leveraged their online offerings as a

way to expand demand for print publications. According to executive director Frank Daniels III, the online service Nando Land (of the News and Observer of Raleigh, NC) has increased the paper's visibility in the community, helping to raise the number of readers from just over 50 percent of the city's adult population to 65 percent during the period 1990-95 [26]. This at a time when newspaper subscriptions throughout the United States are falling. Ziff-Davis Chairman Eric Hippeau has also claimed that the firm's Internet presence and free-content offerings were the number one source of new magazine subscriptions [18]. Management may currently be less concerned of an online threat – an online report by Mensing [25] states that roughly one third of 82 editors surveyed felt that the online product increased interest in the print product, while 46 percent felt that it had no impact at all.

*HYPOTHESIS 3: There is a positive relationship between the performance of an online effort and the offering of online subscriptions to the firm's print publication.*

## **Syndication**

Digital products are also particularly well structured for syndication. In syndication, a firm provides a product to other organizations in exchange for a fee, presumably so that the acquiring party can create value-added products or services by combining the offering with other resources. Rayport and Sviokla consider the aptness of digital products for syndication in discussing the ability to disaggregate a product's value in order to seek alternate virtual channels for distribution. They refer to these virtual distribution channels as the marketpace, as contrasted with the physical world's marketplace. The physical marketplace has three product attributes of content, context, and infrastructure, that are usually aggregated to create value. For example, the value of a print publication is an aggregate of the value of its content (i.e. news), context (i.e. editorial style, presentation format, etc.), and infrastructure (i.e. printing and other physical plant assets, distribution, etc.). By contrast, in the virtual market space, products such as magazines can be desegregated to generate value without pursuing investments to generate these three attributes.

Such value creation through desegregation can have significant business implications. It levels the playing field by allowing smaller companies to compete on par with the larger companies without spending on marketplace-necessary resources. Partnering for content is a mechanism by which firms with digital products and services can generate revenue and leverage the uniqueness of their goods in a less-threatening way that avoids a disintermediation incentive [8]. Syndication also provides a way to pursue a distribution strategy that minimizes marginal cost while increasing volume. As an example of the wide applicability of this strategy, Shapiro and Varian point out that syndication has been successfully employed by a number of firms distributing virtual goods as diverse as Reuters news service and the Baywatch television series. Recent work on the economics of bundling information goods also suggests advantages for content aggregators. For example, economic models by Bakos and Brynjolfsson indicate that firms bundling very large numbers of unrelated information goods can be quite profitable.

Firms that purchase syndicated content tend to be those that dominate their respective categories and can aggregate large numbers of consumers. Obvious candidates include online services and Internet portals. However, specialized content may be sought to supplement a wide variety of commercial offerings including brokerage services, shopping, and sports. These electronic intermediaries becomes aggregators for products and services, crafting a deeper customer experience [8].

*HYPOTHESIS 4: There is a positive relationship between the performance of an online effort and the firm's syndication of content to other online firms and services.*

### **Per-Unit Fee for Online Content**

Software and other types of content may be increasingly disaggregated and metered as on-demand software applets or as individual news stories and stock quotes. Digital content also benefits from the ability to exploit various strata of consumers that can be classified by intent-to-use and immediacy-of-need. Firms offering content available as a per-unit fee engage in an activity that is the opposite of bundling.

Consumers with a need for a specific item that are willing to pay for immediate access to that item can be exploited via price discrimination [24]. Examples include per-article fees offered by BusinessWeek and Fortune Magazines and by the Northern Light search engine.

Price discrimination is a powerful tool that allows sellers to increase their profits and reduces the consumer surplus enjoyed by buyers. In addition, the digital availability of the product expands the audience, in effect seeking revenue from a constituency that might not otherwise pay for a subscription but is willing to pay for immediate access to specific, selected content. Price discrimination also enables sellers to service buyers who would otherwise be priced out of the market, an outcome that increases economic efficiency and expands a product's usage.

*HYPOTHESIS 5: There is a positive relationship between the performance of an online effort and the offering of per-use, disaggregated access to content.*

### **Sale of Additional Merchandise**

If consumers pursue digital content online, the provider of this content has in effect created a distribution channel that may be leveraged in many ways. One way is to sell products and services beyond print publications to consumers. Expansion into non-content e-commerce is assisted by the fact that visitors to content sites are often segmented by interest, and thus they may be easily targeted. Content providers with strong brands may also be able to leverage this asset to expand into new areas. Examples of firms attempting to capitalize on such e-commerce revenues include BusinessWeek which has created the Maven resource for shoppers of business technology, the Wall Street Journal Interactive Edition which offers travel services, and CBS Sportsline which offers a sports merchandising outlet.

*HYPOTHESIS 6: There is a positive relationship between the performance of an online effort and the sale of additional products or services online beyond content from the print magazine.*

## **Affiliate Programs**

Affiliate programs offer another way to derive benefit from non-content e-commerce, but without requiring an affiliate to directly take orders or offer consumers products through a self-branded site. These programs typically provide a partner site operator with a percentage of any sales generated by customers traveling through the partner to the online storefront. Partner firms provide a banner advertisement or some other link so that users can pass through to enter the sales-taking entity. Users are tracked from their site of entry so that partners can be reimbursed accordingly if visits result in sales. Affiliate links provide the web-based equivalent of product placement and as such, these programs can be considered a distribution channel alliance [12], albeit with placement handled via virtual rather than physical real estate.

Vendors seek affiliates since this provides a more cost-efficient sales lead channel than traditional advertising. Affiliate partners are compensated only for sales that are generated from users that click through. Most programs do not pay partners simply for providing a link or banner advertisement.

Affiliates have the ability to strengthen brand and reach. Further, vendor firms benefit from the halo effect of being recommended by or associated with partner site operators. Affiliate programs have grown rapidly in the past few years. Amazon.com has the largest such program, boasting over 300,000 affiliates at year end 1999. Affiliate revenue can be substantial to high-volume content providers. For example, computer news and information site C|net reported over \$80 million in affiliate revenues in 1999. Because of their cost structure, affiliate programs remain one of the most cost-effective mechanisms for sales generation for retailers.

*HYPOTHESIS 7: There is a positive relationship between the performance of an online effort and firm participation in revenue sharing affiliate programs.*

## **PROCEDURE AND SAMPLE**

This investigation is part of a larger effort to study Internet related business activities among firms in the magazine publishing industry. Our interest was in studying the behavior of firms that supply information goods in an online environment. Our strategy was to focus on a single industry, despite the limitations on generalizability, because such a strategy allowed us to concentrate on the effects of our variables of interest while minimizing the variability that is due to different industry contexts and that characterizes many multi-industry studies [10]. The magazine publishing industry was chosen, targeting the managing editor in each magazine as the primary respondent. The industry has a number of interesting characteristics, among them it is one where: 1) products have the potential to be fully digitized, 2) Internet presence could potentially benefit both the expansion of markets and internal efficiencies, and 3) there are already a significant number of firms that have adopted online activity.

A list of all registered magazine publishing businesses in the northeastern U.S was obtained from Harris InfoSource. We offered our respondents both traditional mail surveys and web-based surveys for data collection. Our data collection procedure consisted of two stages, and followed the methodology used by Pearce and Zahra [29]. Specifically, because we recognized that many firms have policies that restrict their employees from participation in surveys, we attempted to maximize response rate by employing two separate mailings. The first mailing, to a total of 1,040 firms, consisted of an introductory letter. In this letter we described the study, introduced the researchers, and invited the editors to participate in the survey. The letter was accompanied by a reply postcard, which the recipients were asked to mail to us if they decline to participate due to the existence of company or personal policy against participation in studies. Following this letter, sixty firms were dropped from the sample due to the respondent's indication of non-participation policy. A total of 980 questionnaires were thus mailed to firms in the magazine publishing industry (SIC 2721) located in the northeast U.S. 150 questionnaires useable questionnaires were returned, which constitute 15.3 percent response rate. This response rate is consistent with the rate observed for mail surveys targeted at senior executives [17].

Since we are concerned in this study with online performance, only those 108 firms indicating that they had a functioning online presence were selected for the subsample analyzed. Any questionnaires with null responses to the performance measures that were combined for use as the dependent variable were also eliminated. This segmentation yielded a final sample of 100 usable observations, each from a separate magazine.

### **The Dependent Variable: Performance of Online Efforts**

Many firms are unwilling to share the results of their online operations since most firms consider financial and traffic information regarding their web-presence highly proprietary information. Unfortunately this complicates our goal of examining the relationship between various revenue streams pursued and online performance. As such, we based our analysis on a set of perceptual measures of performance. Though using perceptual data is not optimal, Venkatraman and Ramanujam [39] found a strong degree of convergence between the two measurement methods. Therefore, we expect that the perceptual nature of our measurements yield valuable and useful insights.

[ --- insert Table 2 about here --- ]

Consultation with individuals and researchers in the magazine publishing industry and pre-testing of the questionnaire led us to focus on five areas where an online presence may benefit the publisher: customer retention, acquisition of new customers, generation of new revenues, profitable activities, and the exploitation of revenue opportunities that do not exist in print media. Respondents were asked to rate the positive influence of their online presence on each of these factors using a 7 point Likert scale (7=high level of positive impact). A principal component factor analysis (Table 2) demonstrated that the construct is uni-dimensional. A one factor solution yielded relatively high loadings (above .5) for all of the component variables. Reliability was examined, returning a Cornbach alpha above .74. The scale of the variable was obtained by computing the mean of the variables for each respondent. The performance variable ranged from 1.4 to 7, had a mean of 4.15, and standard deviation of 1.32

### **Independent Variables: Revenue Streams**

Respondents were presented with a list of seven different revenue sources, and asked to indicate next to each whether their firm generates revenues in that fashion. The seven revenue sources were: sale of online advertising, subscription fee for online content, online ordering of print publication, revenue sharing with online services (syndication), per-unit charges for online content, online sale of firm-branded merchandise, affiliate programs. Table 3 presents the percentage of firms indicating that the revenue source is characteristic, along with intercorrelations of all study variables.

[ --- insert Table 3 about here --- ]

### **ANALYSIS**

Table 4 presents the results of two regression runs exploring online performance. Two models are offered to illustrate the contrast between control measures and the primary variables of interest. The first run presents a partial model examining just select control variables. The second run presents the results of a model considering all variables examined. Multicollinearity was tested for in each model using both the VIF and Belsley-Kuh-Welsch diagnostics [4], and in each model these results indicated that the independent variables were not significantly confounded with each other.

[ --- insert Table 4 about here --- ]

The purpose of the partial model was to first explore the impact of the relationship between online performance and key control variables. Considered were the log of the firm's circulation and the firm's age (calculated as 1998 minus the year the firm was founded). The circulation measure is used as a proxy for the firm's size and associated resources. The firm's age can be considered as representing several factors including brand recognition and firm staying power. This measure has previously been used in studies examining information goods [5; 40]. The results of the partial model show that neither of these values is significant, suggesting that these control variables do not confound our results and do not seem to influence online performance.

The full model shows the results of all variables considered in the study including the two control variables examined above. Each respondent indicated all revenue streams pursued by the magazine from the list of seven Internet revenue streams cited earlier, with an eighth option presented – 'our online efforts do not generate any revenue'. These revenue streams are directly associated with the seven hypotheses outlined earlier. With the introduction of these seven factors, we see a dramatic improvement in the explanatory power of the model. The adjusted  $R^2$  suggests that the full model explains roughly 14.7 percent of the variance in the data. The change in  $R^2$  was .220 and the change in  $F$  was 3.687, with the  $F$  statistic of the new model being highly significant.

Of those variables considered, four items; the sale of online advertising, subscription fee for online content, online ordering of print publication, and syndication of content; all proved significantly positively related to online performance. These results provide support for associated hypotheses 1, 2, 3, and 4 respectively. Unexpectedly, one measure, the proxy for affiliate programs, was significantly negatively associated with online performance. Interpretation of these results follows.

## **RESULTS INTERPRETATION AND DISCUSSION**

Using the magazine publishing industry as a context, this work examined the relationship between seven proposed revenue streams and managers' perceptual measures of the performance of their online efforts. Seven hypotheses were proposed for the seven revenue streams. Our results suggest support for four of these hypotheses.

Hypothesis 1 suggested a link between firm performance and online advertising as a revenue stream. Despite controversy over the effectiveness of online advertising, it would appear that those firms that rely on online advertising as a revenue stream are more pleased with the performance of their online efforts than those firms not offering advertising on their sites. Online advertising may allow firms to offer content

priced at marginal cost while still earning revenue from online efforts. Given the increasing expectation among consumers for the free provision of online content, offerings that are in-part funded by advertising may allow firms to attract a larger number of consumers, fueling network externalities [20]. The larger customer base may also be funneled into other revenue-generating opportunities highlighted earlier.

Support was also offered for the second hypothesis, suggesting a link between web performance and fee-based subscription offerings for online services provided by magazine publishers. Although this result may conflict with the trend toward providing free content online, the significance of this factor suggests that some consumers see substantive value to the online offering (e.g. search, copy and paste, no storage requirement) that exceed those of the print publication alone. Subscription access to online archives can also be viewed as a product bundling, therefore support for this strategy can be seen as empirical validation of the bundling hypothesis as applied to information goods.

Evidence supporting the third hypothesis, the positive relationship between offering the ability to subscribe to print publications online and online performance, presents an important and intriguing result. Many managers are concerned that an online effort may cannibalize traditional media offerings. However, these results seem to suggest that the online effort may act as a catalyst for expanding the circulation and market share of print publications. As such, many firms may be willing to invest in online services, even at a loss, if they result in funneling more customers to other revenue-generating units. It would seem that the global information dissemination capabilities of the Internet can be exploited not only to support marketing efforts, but also to identify and develop new markets [9].

The study also offers positive support for the fourth hypothesis related to syndication. Many researchers have noted that online environments can foster the increased syndication of digital content. Our results suggest that magazines pursuing the syndication of their content enjoy greater benefits from their online presence than those who do not. It is particularly interesting to note that while the syndication hypothesis was supported, no support was offered for the per-unit sale of content. When considered in conjunction with the support for subscription services, this seems to suggest that consumers are more actively selecting

products based on content aggregation rather than disaggregated, per-unit content. This can also be interpreted as reflecting the positive benefits for bundling information goods. From a practitioner perspective, it may also suggest an explanation for the current state of competition among certain online businesses. For example, while search engines that offer per-unit content purchases such as Northern Light struggle, aggregate provider sources such as About.com have continued to grow.

Most unexpected was the negative correlation between the employment of affiliate programs and profitability. The negative correlation is unclear, however several explanations can be proposed. One may be that the affiliate programs pursued by respondents were either difficult and/or time consuming to administer. Another scenario is that those firms pursuing affiliate programs may be unprofitable firms to begin with and that those firms that struggle to earn revenue from advertising or content-based services may seek affiliate programs out of desperation rather than as a significant profit center. Affiliate revenue is also unlikely to persist much beyond the initial introduction of buyer to seller. As such, this may only be a temporal, rather than continuous and consistent source of revenue<sup>1</sup>. Sale of non-content items also did not prove significantly related to performance in our sample. It may be that e-commerce forays into non-content, non-core businesses are poorly received as customers seek items from more established outlets.

## **CONCLUSION**

There is tremendous confusion among practitioners regarding the appropriate choice of revenue streams for electronic commerce. This issue is particularly pressing for firms providing information goods, as these markets are increasingly under pressure to provide free content [16]. Although there has been significant recent research into the dynamics of information markets, there is thus far a notable lack of empirical work. In particular, the relationship between the pursuit of various revenue streams and the performance of online efforts remains unknown. The work presented herein targets this gap.

Of the seven revenue streams considered, four were correlated with management perception of site performance: the sale of online advertising on the firm's site, subscriptions charged for online content, the

ability to use the online presence to subscribe to print publications, and the firm's syndication of content to other online services. Those revenue sources that could not be verified as being related to manager satisfaction with site performance were: fee for piecemeal access to content items, sale of non-content items, and participation as a revenue-sharing affiliate of other e-commerce sites. These results provide empirical validation of theoretical research on product bundling and syndication while challenging earlier assumptions related to disaggregation. The results also seem to suggest that rather than cannibalizing a magazine's physical sales, those firms surveyed are actually finding that their online presence has increased sales of print publications. The results also suggest that firms are realizing positive benefits from the sale of online advertising and from offering subscriptions to online content.

As with all research, certain caveats must be presented with regard to the interpretation of results. Although perceptual measures of firm performance have been empirically demonstrated as being correlated with actual performance, interpretation of the extent of impact of these revenue streams could be more explicitly quantified by incorporating financial data into the model. The study also examined a wide cross-section of magazine publishers as determined by their Standard Industry Classification (SIC) code. Huizingh [19] has suggested a relationship between the type of content offered and site usability. Future studies may consider these issues with a further exploration of user-perceived site and content differences when examining the performance of online efforts. Finally, online environments continue to evolve dynamically. Over time, new business models may arise and the impact of existing models may change as the installed base of users increases, consumer behavior changes, or as delivery mechanisms advance. Longitudinal studies of site performance over time can strengthen our understanding of the constancy of results or related market dynamism.

**TABLES**

<b>Publication</b>	<b>Bus. Model</b>	<b># Readers</b>	<b># Staff</b>	<b>Profitable</b>
c net	Advertising, e-commerce	4 million	586	No
Feed	Advertising	50,000	6	No
Forbes Digital Tool	Advertising	40,000	23	1Q-3Q 97
Salon	Advertising, syndication, subscription	140,000	38	No
Slate	Advertising, subscription	140,000	30	No
Wall St. Journal Interactive	Advertising, subscription	150,000	120	No
ZD-Net	Advertising, e-commerce	5 million	268	4Q 97

**Table 1: Examples of Diversity Among Online Content Providers**

Source: Red Herring, April 1998  
(e-commerce refers to the sale of non-content items)

<b>Variable</b>	<b>Component</b>
Retain customers	0.713
Attract new customers	0.711
Generate new revenue	0.865
Profitable	0.705
Rev. opps. not avail. in print	0.521

**Table 2: Component Matrix from Principal Component Analysis**

Variable	% Firms with revenue source	1	2	3	4	5	6	7
1 Advertising	40	-						
2 Subscription fee / online efforts	15	-0.03	-					
3 Order print subscriptions	46	0.12	-0.09	-				
4 Syndication	7	0.01	0.10	0.05	-			
5 Fee for per-item access	6	0.05	0.24	0.10	0.26	-		
6 Sale of non-content items	14	0.31	-0.09	0.25	0.01	0.02	-	
7 Affiliate programs	9	0.20	-0.14	0.21	0.17	0.06	0.25	-
8 Performance	N/A	0.23	0.18	0.28	0.17	0.05	0.10	-0.07

Note: Correlations above .20 are significant at .05 level.

**Table 3: Correlation Matrix**

		Coef	t-stat
<b>Partial Model</b>	<b>(Constant)</b>	4.67	4.17 **
	<b>Ln(Circulation)</b>	-0.05	-0.45
	<b>Age</b>	0.00	-0.29
		<b>R<sup>2</sup></b>	0.003
	<b>Adjusted R<sup>2</sup></b>	-0.017	
	<b>F</b>	0.159	
<b>Full Model</b>	<b>(Constant)</b>	3.95	3.08 **
	Control Vars. <b>Ln(Circulation)</b>	-0.05	-0.34
	<b>Age</b>	0.00	-0.85
	Rev. Streams <b>Advertising</b>	0.65	2.26 **
	<b>Subscription fees for online efforts</b>	0.60	1.65 *
	<b>Order print subscription/pubs.</b>	0.82	3.13 **
	<b>Syndication</b>	0.99	1.89 *
	<b>Fee for per-item access</b>	-0.46	-0.78
	<b>Sale of non-content items</b>	0.13	0.34
	<b>Affiliate Progs.</b>	-0.79	-1.79 *
		<b>R<sup>2</sup></b>	0.223
		<b>Adjusted R<sup>2</sup></b>	0.147
		<b>F</b>	2.910 **
	<b>D R<sup>2</sup></b>	0.220	
	<b>D F</b>	3.687 **	

n=100; Significance: \* p < .05, \*\* p < .01

**Table 4: Results Table**

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<sup>i</sup> It is worth noting that the use of affiliate strategies may be in jeopardy. In the Spring of 2000 Amazon.com was awarded U.S. business model patents for Internet-based affiliate marketing. It is unclear how the firm will exert its control over these patents, however this issues raises the possibility of strict limits or heavy licensing fees associated with firms other than Amazon that seek to pursue affiliate marketing.