A Strategy Simulator for Newspapers: Overcoming the "Silos" to Do Whole-Enterprise Planning

Gary B. Hirsch
Creator of Learning Environments
7 Highgate Road
Wayland, Massachusetts 01778 USA
1 (508) 653-0161
GBHirsch@attbi.com

Vincent Giuliano
Electronic Publishing Group
241 Glezen Lane
Wayland, Massachusetts 01778 USA
1 (508) 358-2207
vgiuliano@attbi.com

Melody Winnig
Electronic Publishing Group
241 Glezen Lane
Wayland, Massachusetts 01778 USA
1 (508) 358-2207
mwinnig@attbi.com

Abstract

Newspapers have faced a series of challenges for many years, not always successfully. Declining readership has led to consolidation and downsizing, especially in the US. The ability of newspapers to respond to these challenges has been compromised by having their departments function as independent "silos" without much integration. Newspapers began facing additional challenges in the 1990's as online delivery of news began to compete with print. This paper describes a simulator designed to help newspapers develop coherent strategies that integrate across the departmental silos and provide direction at the enterprise level. The simulator also enables newspapers to examine strategies for developing online businesses and making the transition to media enterprises with newspaper and online components. The paper presents screens from the simulator with a unique design that enables users to closely associate system behavior with its underlying causal structure.

Key Words: newspaper, publishing, online services, simulators

Background: Transitions Facing Newspapers and Other Management Challenges

At the time we created the Newspaper Company Simulator in the late 90s, the newspaper industry in the US and Western Europe had been facing a series of challenges, not always successfully. Readership had been steadily dropping – for almost 20 years in the US, with readers migrating to other media, namely TV and Internet. Demographics of the readership had also been steadily shifting, with older people and retirees outweighing younger more affluent readers to whom advertising is mainly directed. With these declines, there had also been a long-term decline of advertising market share. Advertising is the life-blood of big US newspaper companies, typically representing 80% or more of revenue.

US newspapers had already undergone several rounds of downsizing: of staff, editorial and news coverage, and even the page dimensions of the paper itself. Because of high fixed costs, however, the limits of downsizing were being approached. Big-city daily papers were hardest hit, while some small-town newspapers and weekly papers continued to do well. Having no other alternatives to become profitable, a few prominent newspapers had already closed their doors, like New York Newsday.

For over 75 years, the history of the newspaper survival in big US cities has mainly been one of cannibalism. In the 1930s the typical large US city had 3-7 daily newspapers competing with each other. This is still true in much of Europe and Latin America. But as newspapers have died off, the remaining stronger ones "ate" their businesses and managed to survive. Today, with very few exemptions, big US cities either have one newspaper or two newspapers run by the same management under a "joint operating agreement." The opportunities for survival-by-cannibalism mostly don't exist any more.

Newspapers were among the first to start web services, and most newspapers had already built online editions and web services by the late 90s. During those wildest days of web expansion when we planned our model, some progressive newspaper executives anticipated that newspaper companies would evolve into primarily being web companies. Indeed, there is a strong parallelism of the traditional services of a newspaper and those that can be provided dynamically online.

Accordingly, we built our model in part to allow modeling of such a transition. We set out to model the typical online service of a newspaper company, but what online services consisted of continued to evolve rapidly at the same time we were building our model. As we added more features to represent what was going on in the online marketplace, we soon found that the online part of our model was significantly more complex than the newspaper part. We added variables to our model like Relevance of Web Appropriate Content, Database Application Effect on Personalization of Design, and Staff Effort Required Per Unit of New E Commerce Applications, but there was no end to the seeming need for new complexity and variables.. The newspaper part was stable, newspapers themselves exhibiting virtually no changes in their business or operational patterns. For the online part, however, we found ourselves confronted with a steady

series of new online trends, all heralded as being the wave of the future. We could not tell which trends were fads, which permanent, and which ones were appropriate to newspaper online services. These innovations included online city super-sites independently trying to enroll every small business with its own web, online auctions, online shopping malls, online auto, real-estate and employment super-sites, online music exchanges, online money management and brokerage, etc. - even online gambling. Although we introduced a few such elements into our model we stopped as the complexity of the model increased and it became clear that the evolution was continuing.

The newspaper companies at the time were also confused by such online development. Despite being early online entrants, they tended to pursue conservative policies by the late 90s. There generally was a culture clash between the traditional management and editorial staff of the newspaper and the younger, more innovative and ambitious people hired to operate the newspaper website. Newspaper company executives mainly saw the online service as an extension of their printed newspapers, and selling advertising as the best revenue model for online. This revenue model did not work for the most part. Charging for access was also unsuccessful. The online Wall Street Journal was probably the only main exception. Local newspaper online services were mostly money losers. They enjoyed very little online market share compared to popular national services like Yahoo!, e-bay, Quicken, AOL and MSN. There was a serious open question that still exists today – how much to invest in traditional newspaper approaches, and how much to invest in the new online technology. Since the online services were money losers, they tended not to get the resources they wanted.

Very few of the newspaper online services were innovative or noteworthy. Therefore our model was in fact not bad at representing what newspaper companies actually did online – even though it did not undertake to represent what they could have done if they were more innovative.

Finally, there was a serious resistance in newspaper companies to address their critical issues of survival and needs to evolve. Newspaper companies had evolved over 100 years into organisms with highly-specialized, but compartmentalized departments (like Editorial, Advertising, Circulation and Production), but with little change-oriented brainpower that allowed them to balance priorities, or to sense the changes in environment and evolve accordingly. The online service was yet-another such department. Newspaper companies mainly watched what other leading newspaper companies did, and imitated that. Look at a newspaper company in the US, Columbia, Norway, China, India or Nigeria – they were all organized more or less the same, they all went to the same conferences where they listened to one another, and they all tended to think along more or less the same lines.

Background on the Simulator and El Universal, Why It Was Developed

Our consulting experience with newspaper companies indicated to us that, if newspapers were to survive in the longer term, they confronted a strong need to break out of their boxes. There was a strong need for developing strategic perspectives for survival, for

systems thinking among management, and for communication among departments that operated as isolated silos of responsibility. The circulation department could launch a promotional drive that resulted in higher circulation which resulted in higher cost for paper, production, and distribution, but without significant increase in advertising. Readers might be happy, but the bottom line could suffer severely. The production department could justify acquiring new presses in terms of needing fewer production staff, daily production-cost savings, earlier closing deadline, and a higher quality product. The advertising and circulation departments could also see an advantage to more and better color. However, in the face of an overall declining business, the hundreds of millions of dollars of debt burden required to acquire the presses could be ruinous. Especially if the impact on increased advertising was minimal. The newspaper could beef up its editorial department and create a higher-quality editorial product. There would be more costs not only for the editorial department but for the greater circulation and larger number of pages in the paper and more newsprint. It would seem that the paper is prospering. But, if the local market for advertising is near-saturated, the financial result could be disastrous.

Then, there were the very difficult issues of how and where a newspaper company should invest:

- In presses and other production technologies, for the reasons indicated?
- In editorial staff to make a better product?
- In possibly making less and buying more editorial content?
- In better editorial systems?
- In promotions for the newspaper?
- In more extensive online services?

Also, each of these are areas where current levels of investment could be cut back.

Further, there was an issue of how to assess the interrelationships of investment decisions and various financial factors, such as cash flow and impact of debt burden. The online service itself posed additional issues that were difficult for newspaper people to fathom, such as:

- The extent to which the editorial and online newsrooms should be coordinated or allowed to operated independently
- Whether the free online edition cannibalized circulation from the newspaper? And what to do about this, such as withhold articles from online until they appear in print?
- Should selling online advertising be done by newspaper ad sales staff, or by people with main allegiance to the on line service?
- How much to invest in online technology, operating staff, advertising, acquiring information from third parties, or in brand new services such as online auctions?

Finally, and perhaps most central to all, there was the question of how to get managers in the various newspaper and online fiefdoms to talk with each other so they could mutually

appreciate each other's viewpoints and come to overall strategies in the best interest of the company as a whole.

Based on these and similar situations, we elected to build a simulator that simulates the detailed operation of a newspaper company, including some peripheral aspects of newspaper company operation, such as doing contract printing. We also elected to simulate the operation of a typical basic newspaper online service. We needed to be able to simulate the newspaper proper and the online service independently, and as they are combined on the enterprise level

All of these matters had to be looked at over a period of years, and also anticipating contingencies of the marketplace. What would happen if the price of newsprint goes up significantly, as it does from time to time? What if the cost of maintaining debt goes significantly up, or down? What if the migration of readers from newspapers to online goes up or down? What if, for International newspaper, the country's currency is devaluated thus greatly increasing the cost of newsprint?

El Universal of Caracas was and still is the leading newspaper in Venezuela. It competed with six other daily papers in Caracas, and its market share of advertising was equal to that of several of its largest competitors put together. The paper dates back to the nineteenth century. In the early 90s the newspaper came under a new progressive management that launched a series of studies and activities to modernize the paper and make sure it remained in the forefront in its market. It also created one of Venezuela's leading web services. El Universal faced most of the kinds of issues identified above, and became one of three partners in the SimVenture undertaking, along with , an experienced international consultant in the newspaper industry, and who built the actual SimVenture model. The newspaper was a sponsor of the SimVenture model and also provided much of the operational insight and data needed to develop and test it.

The Miami Herald was also very helpful to us in the development of the model, particularly its online aspects. The model was based in the first instance on what we learned at El Universal, but was modified and upgraded also to encompass insight and operational data provided us by the Herald.

Structure of the Newspaper Model and Simulator

There is a long history of using management simulators to teach System Dynamics and Systems Thinking. Senge and Lannon describe the value of simulators or "microworlds" as tools for organizational learning. Certain simulators such as People Express have had extensive use for general management training and have been studied by Sterman for their effect on learning. Simulators have been developed in specific fields such as health care to help those in the field understand the implications of major changes (see Hirsch and Immediato, Hirsch and Kemeny). Particular design issues such as the desired degree of transparency in simulators have been studied by Grossler and by Machuca et al. There have also been applications of System Dynamics to the newspaper and publishing industries by Hall.

The model ties together the various functional areas of a newspaper company, which we referred to above as separate silos, into an inter-related entity. Figure 1 shows an overview diagram of the newspaper module and how the various functions such as editorial, circulation, advertising, and production relate to each other. Editorial Content is the principal determinant of the Perceived Value of the Newspaper for readers that, in turn, determines the Weekly Circulation. Circulation drives revenue to a limited extent, but, more importantly, drives Advertising Content that is typically responsible for 80% of a newspaper's revenue. Circulation also determines Production Costs for labor to run the presses and distribute the paper and for the paper and ink that are used. The newspaper's Net Income determines the levels of staffing and investments it can afford.

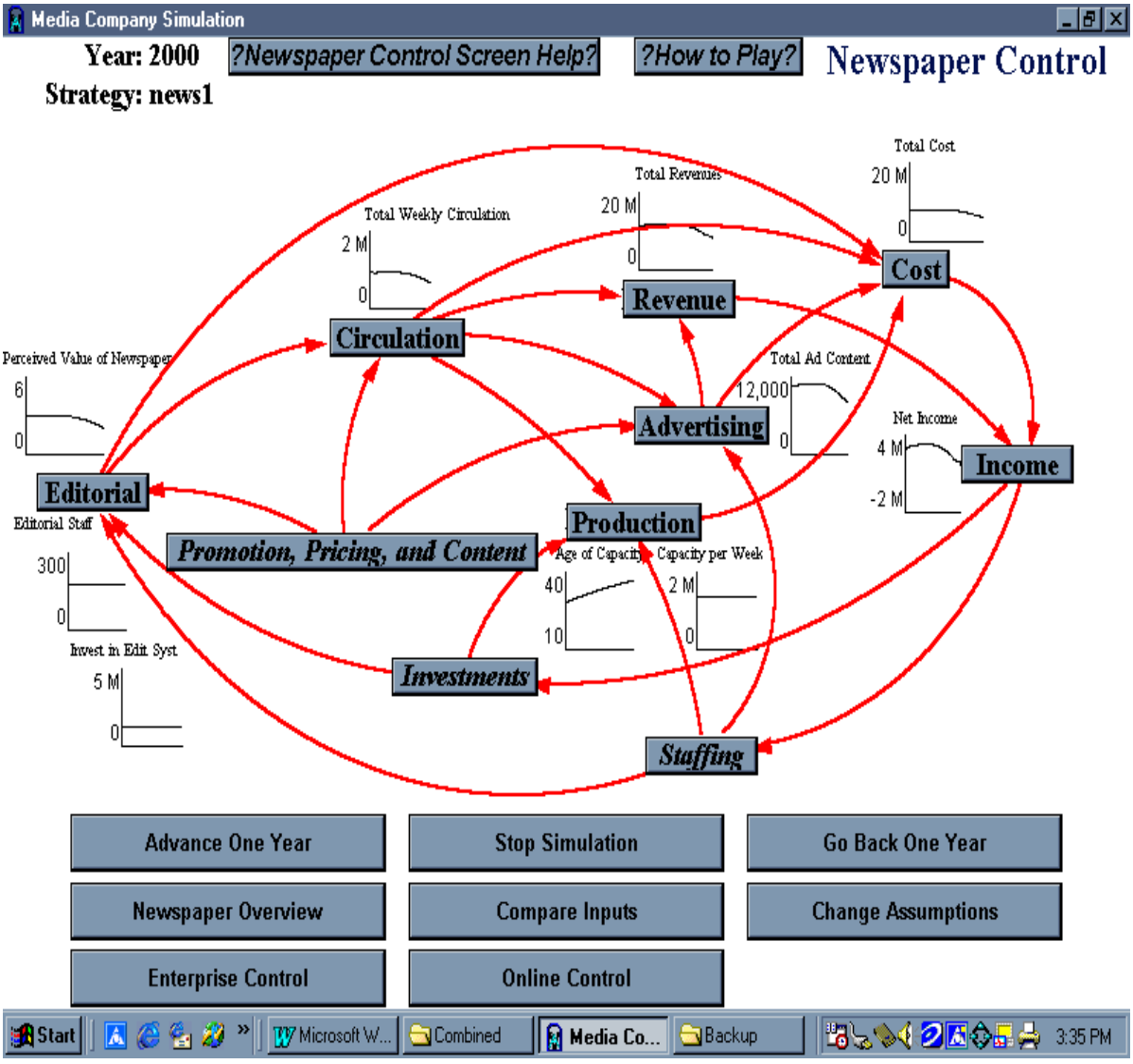

Figure 1: Overview of the Newspaper Model

The simulator's interface makes it possible to see the behavior of key variables directly on the overview diagram. In the simulation displayed in Figure 1, the newspaper operates in a benign environment. Little is assumed to change, but there is a small decline at end of the ten-year period, though the newspaper remains profitable. Why does this happen in a stable scenario? The answer lies in the aging printing plant (reflected in Age of Capacity) that becomes less flexible and less able to handle changing formats, color, etc. This reduces the Editorial Quality and the Perceived Value of the Newspaper to readers who buy fewer copies. Fewer lines of Advertising Content are sold as Weekly Circulation decreases and Revenue and Net Income decline as a result.

Clicking on buttons on this overview screen also lets users "drill down" and understand what's going on in the model in greater detail. Figure 2 shows a more detailed view of the factors affecting Editorial Content and the Perceived Value of the Newspaper that is reached by clicking on the Editorial button on the overview. This is also the way that users can get to detailed results in each area and compare performance across several simulations.

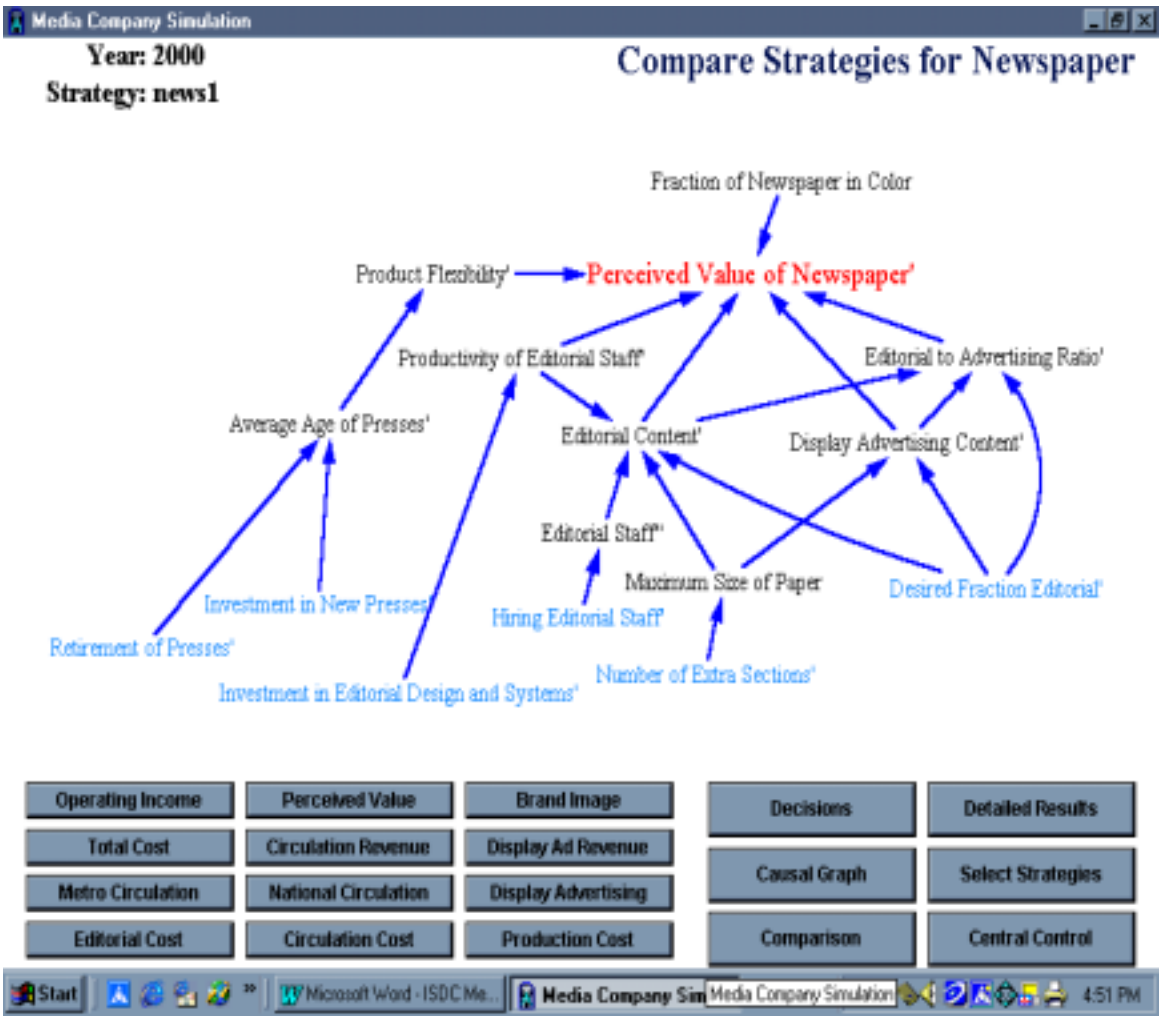

Figure 2: Detailed View of the Factors Affecting Editorial Content and Quality

The screen in Figure 2 shows that the Perceived Value of the Newspaper is partially determined by Product Flexibility, the ability to change formats quickly (which requires reasonably modern presses). The amount of Editorial Content and the Editorial to Advertising Ratio are the other principal determinants. Editorial Content depends on the size of the Editorial Staff and Investments in Editorial Design and Systems that affect Editorial Productivity. The items shown in blue on the diagram in Figure 2 are all decisions that will affect editorial performance and the Perceived Value of the Newspaper to readers. Some are financial decisions such as Investment in New Presses while others are policies such as the Desired Fraction Editorial.

Users can get access to these various decisions by clicking on the italicized buttons. The one marked "*Promotion, Pricing, and Content*" takes them to the decision screen shown in Figure 3.

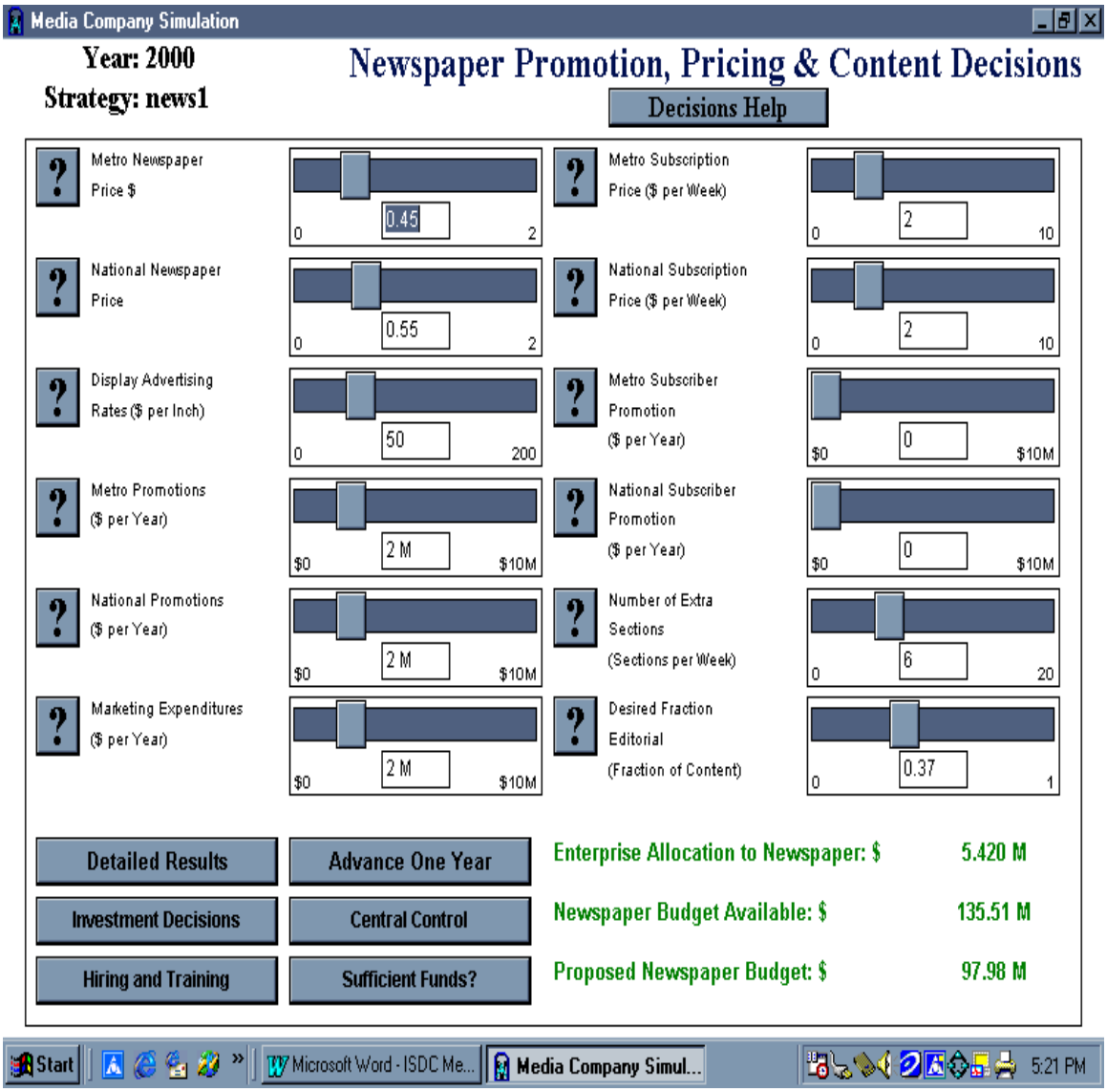

Figure 3: Decision Screen for Pricing, Promotion and Content

The "sliders" on the screen shown in Figure 3 let them set the (Metro and National) Newspaper Price and Display Advertising Rates per column-inch, control (Metro and National) promotions budgets, and decide whether to add Extra Sections among other things. Other decision screens focus on investments and staffing. Users typically move though simulations a year at a time, making decisions, moving forward, observing the results, and making a new set of decisions based on those results.

Strategy for the Newspaper as a Whole: Overcoming Silo-Level Thinking

With all of these decisions at our disposal, how can we craft a strategy that improves on the lackluster performance we saw in Figure 1? In that simulation, obsolescing plant kept us from competing effectively and Total Weekly Circulation, Total Ad Content, Revenue, and Net Income all declined. One thing to try is revitalizing the paper by investing in editorial design and systems and hiring editorial staff. Figure 4 provides an overview of the results when this strategy is implemented.

This simulation assumes the same environment as the previous one. We try to make things better by investing in Editorial Design and Systems ($1 million per year vs. $240,000 needed to simply maintain initial level) and hiring 25 new Editorial Staff per year. Most of the variables on the graphs go up as we might have hoped. The Perceived Value of the Newspaper, Weekly Circulation, Total Ad Content, and Revenue all increase substantially. The big surprise is that, despite these otherwise positive results, Net Income falls and becomes a loss rather than just a weaker profit.

The graphs give us a clue to what is happening. Focusing on the Weekly Circulation and Revenue side alone would suggest a favorable outcome, but why is Net Income going down when everything else seems to be going so well? Total Cost is going up! Let's drill down and look at what's going on in more detail. Figure 5 shows that Circulation Revenue has gone up substantially in this simulation (News3-blue line), compared to the previous simulation (News1-red line) as we would have expected it to. It is about $2 million higher than in the previous simulation. Figure 6, shows that Display Advertising Revenue is also up over the previous simulation as the newspaper becomes more attractive to advertisers as a result of the higher circulation. Advertising revenue is about $3 million higher after the strategy has its principal effect. However Total Cost, as shown in Figure 7 has doubled and increased by about $8 million. Circulation and production costs are much higher. The result is lower Net Income. Notice the dramatic drop in Net Income between years 4 and 5 as other variables are starting to increase. By the end of the simulation, the newspaper is losing money.

Why do costs rise so dramatically? Circulation costs increase simply because there are more papers to distribute. Higher production costs are due to a combination of more papers being printed and an increase in the average size of the newspaper. The size of the paper expands to accommodate the increase in Editorial Content and increased Advertising Content attracted by the higher circulation. Display Advertising Revenue increases somewhat as Weekly Circulation goes up, but is limited by the total size of the newspaper advertising market. Display Advertising Revenue does not increase by

enough to offset the higher costs and Net Income drops. We've created a big problem by focusing on one "silo", editorial, and ignoring the potential adverse effects on other areas.

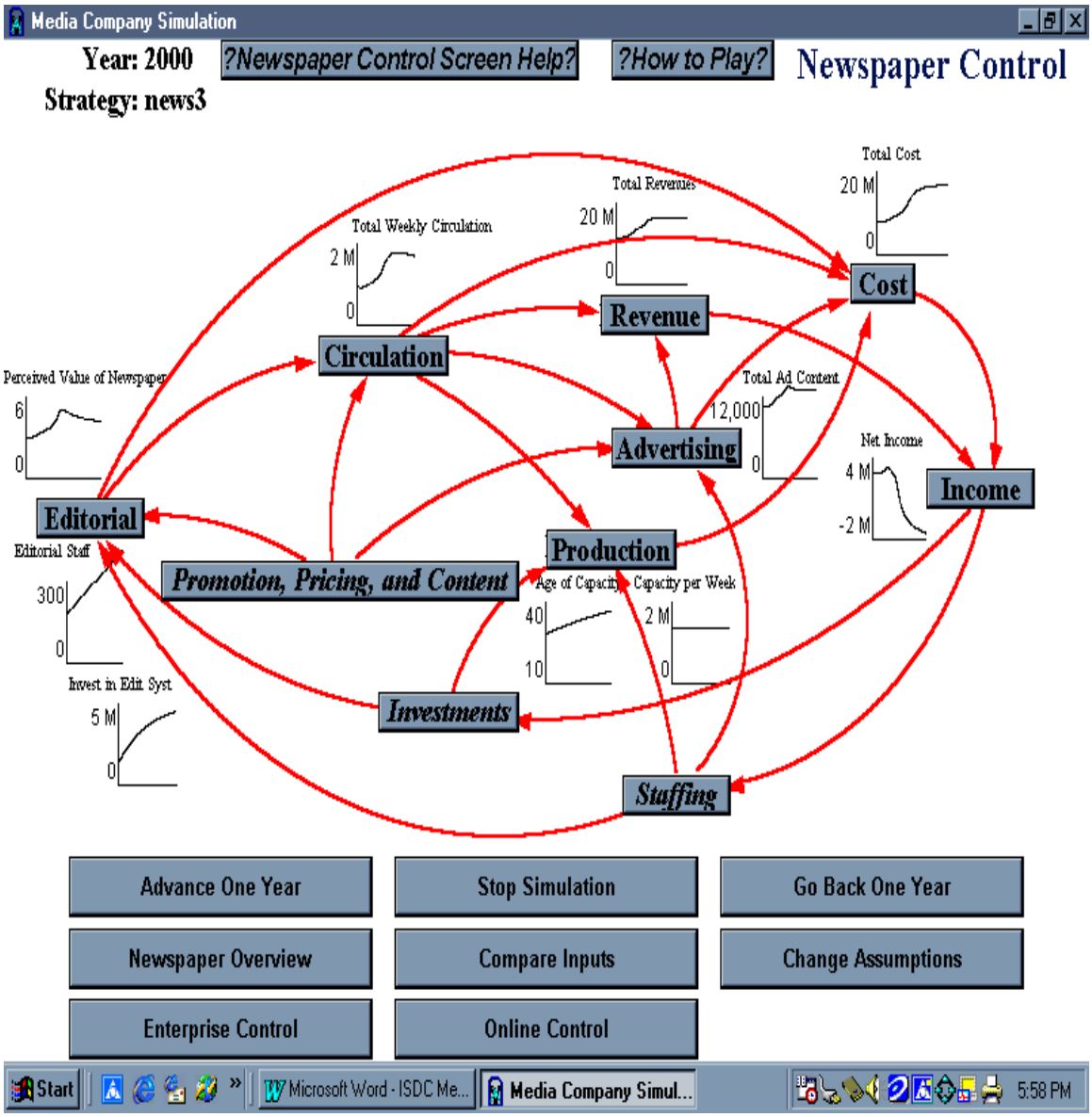

Figure 4: Overview of Results with Strategy of Investing in Editorial Design and Systems and Hiring Editorial Staff

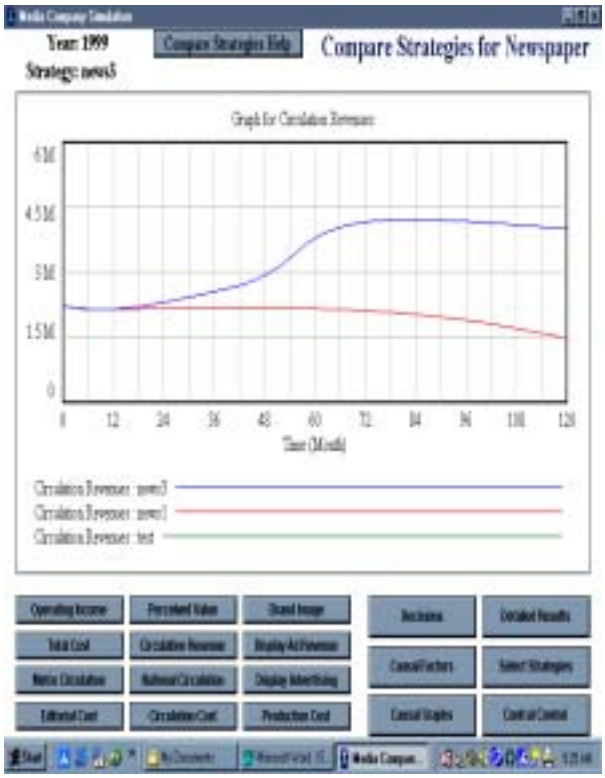

Figure 5: Circulation Revenue

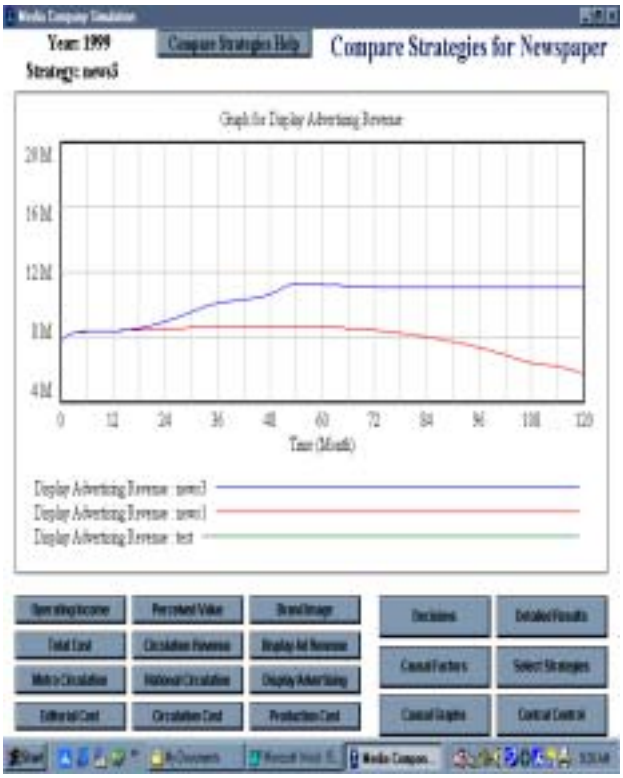

Figure 6: Advertising Revenue

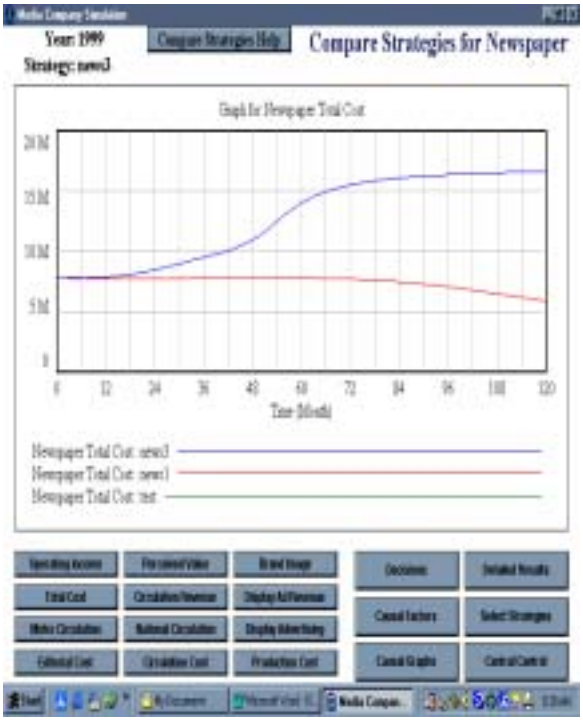

Figure 7: Total Cost

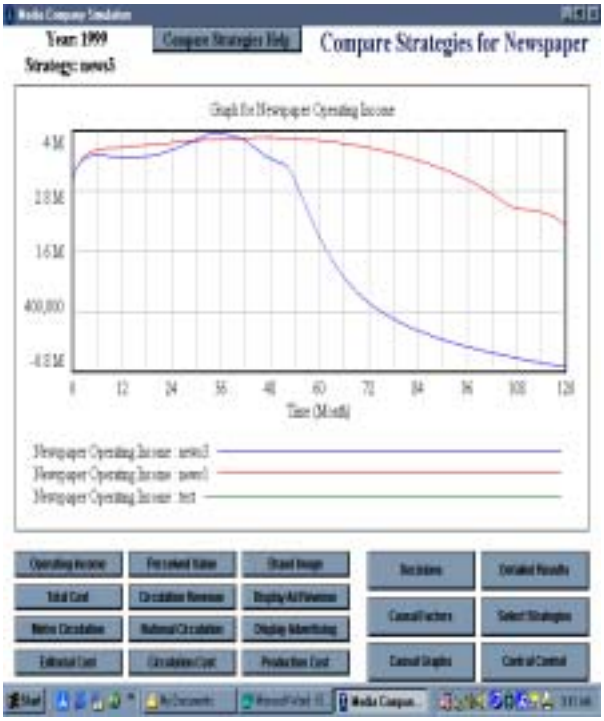

Figure 8: Net Income

What can we do to avoid this problem? The problem is a combination of too much circulation and too little revenue. Let's look to another functional area of the paper for an expanded strategy. Raising the newsstand price of the paper from 50 cents to 80 cents will have the combined effect of increasing Circulation Revenue per copy and lowering Weekly Circulation. This is also equivalent to saying we're creating a better editorial product and people should be willing to pay more for it. Figures 9-12 show the effect of adding this element, initiated at the beginning of Year 4, to the Investment in Editorial Design and Systems and increase in Editorial Staff that were the focus of the strategy used in the previous simulation (News 3). The environment in which the newspaper operates remains the same as well.

This strategy has the desired effect in trimming Metro Circulation, as shown in Figure 9. (In these graphs, the new strategy News4 is in blue, the previous strategy News3 is in red, and the original simulation News1 is in green.) With lower circulation, Total Cost is also lower as shown in Figure 10. As a result of the lower Total Cost, Net Income (shown in Figure 11) jumps with the increase in newsstand price and does not decline as it did in News3. It actually remains higher than in News1. Circulation Revenue had remained roughly the same with the higher price offsetting the lower volume. Display Advertising Content (shown in Figure 12) and Revenue also did not suffer too much since they were at saturation levels for the market in News3 and only went down a bit as circulation dropped.

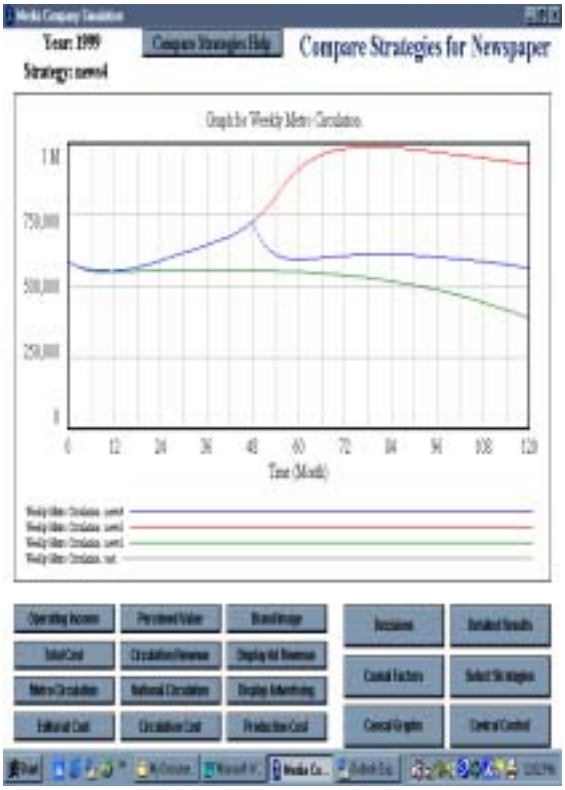

Figure 9: Metro Circulation

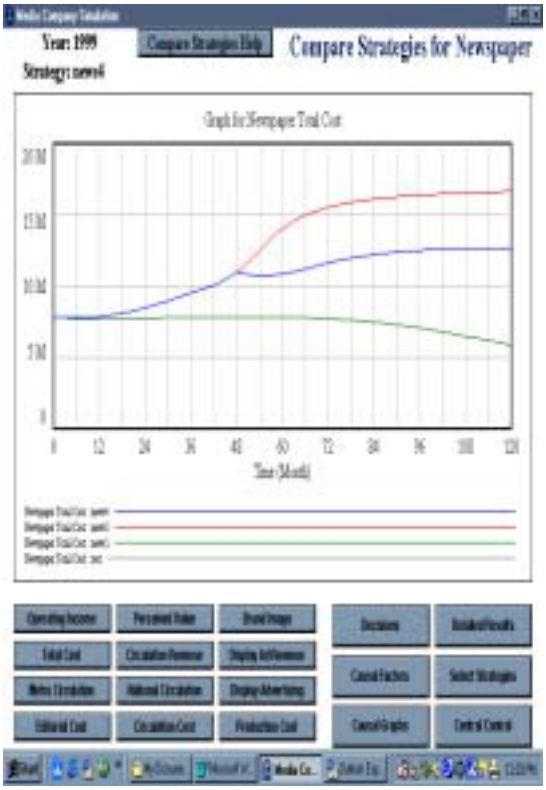

Figure 10: Total Cost

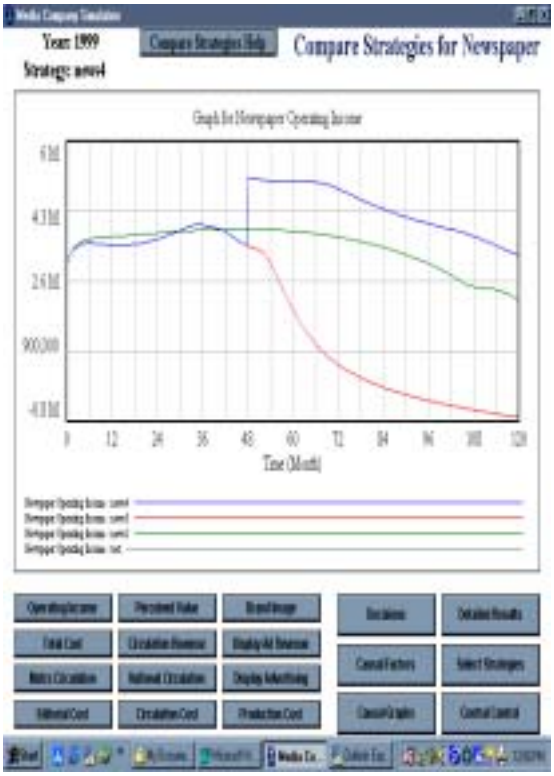

Figure 11: Net Income

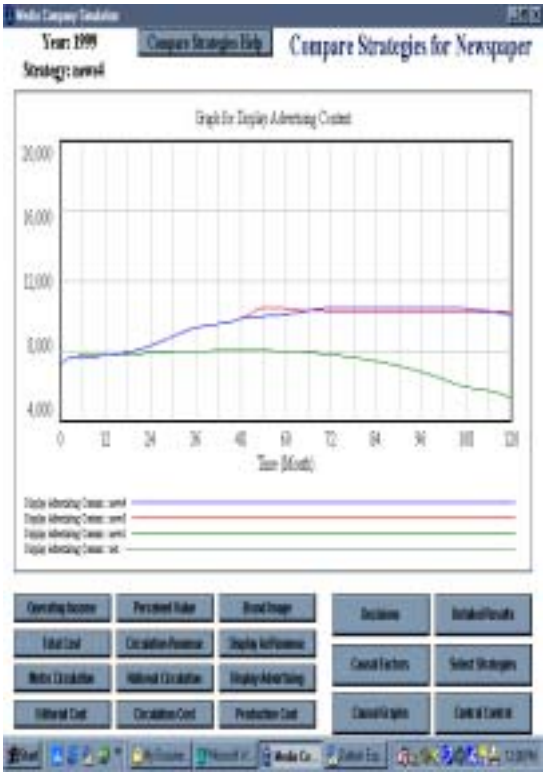

Figure 12: Display Advertising Content

These results were much better than the disaster in News3, but produced only marginally better Net Income than in the first simulation, News1, where technological obsolescence caused profits to erode over time. What can we do to improve Net Income? If raising the newsstand price helped a bit, why not try raising the Display Advertising Rate instead? Much more of the newspaper's revenues come from advertising than circulation. An increase in advertising rates should produce proportionally more Revenue. Figure 13 provides an overview of the results when we add an increase in Display Advertising Rates from $50 to $70 per column-inch at the beginning of Year 4 to the Investment in Editorial Design and Systems and the increases in Editorial Staff. Newsstand prices are left unchanged in this simulation rather than being increased as they were in News4.

The results demonstrate that not all price increases are created equal. The increase in advertising rates has a terrible impact where the increase in newsstand prices had a beneficial effect. Why? Most of the key variables displayed in Figure 13 peak about in the middle of the simulation after the rate increase for display advertising is introduced. The Perceived Value of the Newspaper to its readers drops despite the fact that investments have been made in editorial systems and staff. This is followed by a decline in Weekly Circulation and Total Revenues. Even though Total Costs go down, Revenues drop faster and Net Income literally falls off the charts. Total Ad Content, rather than dropping a bit in response to the higher rates, drops essentially to zero.

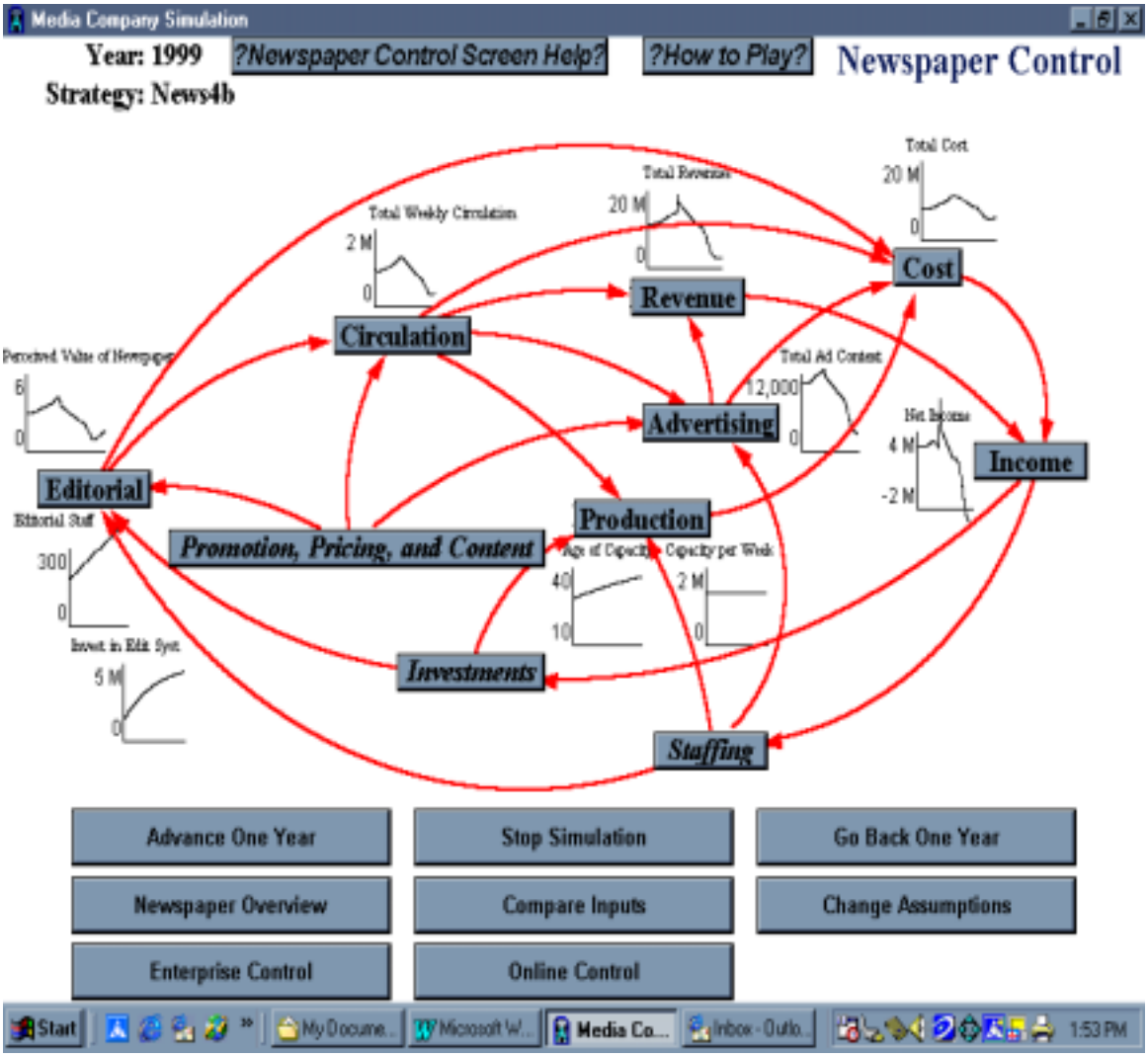

Figure 13: Overview of Results with Investment in Editorial Design and Systems and Hiring of Editorial Staff Together with Increase in Display Advertising Rates

What caused this sequence of events? The amount of Editorial Content in each day's edition at most newspapers is determined by the amount of Display Advertising Content purchased by advertisers. The decrease in Display Advertising Content caused by the higher display advertising rates causes the amount of Editorial Content actually published to be reduced, the Perceived Value of the Newspaper to readers to go down, and Weekly Circulation to decrease. This causes Display Advertising Content to drop further because the newspaper is less attractive to advertisers, especially at the higher rates. These shifts set off a downward spiral in Display Advertising Content, Editorial Content, and Weekly Circulation that overrides the impact of the editorial systems investment and increased staff and produces a severe decline in Net Income.

Figure 14 shows how Display Advertising Content (now the blue line) in this simulation (News 4b) declined compared to previous simulations. The decline began immediately

after the rate increase at the beginning of Year 4 and accelerated later in the simulation as a result of the downward spiral. Figure 15 shows how the Perceived Value of the Newspaper to readers (again, the blue line) declined in lockstep as declining Display Ad Content drove Editorial Content downward as well.

This result suggests that the impact of changes on a system is extremely dependent on where in the system those changes occur. While newsstand and advertising price increases might be expected to have similar positive effects, higher advertising rates had the unintended consequence of setting off a downward spiral because of an indirect effect on editorial content. Having less space devoted to editorial content offset benefits from improvements in editorial quality.

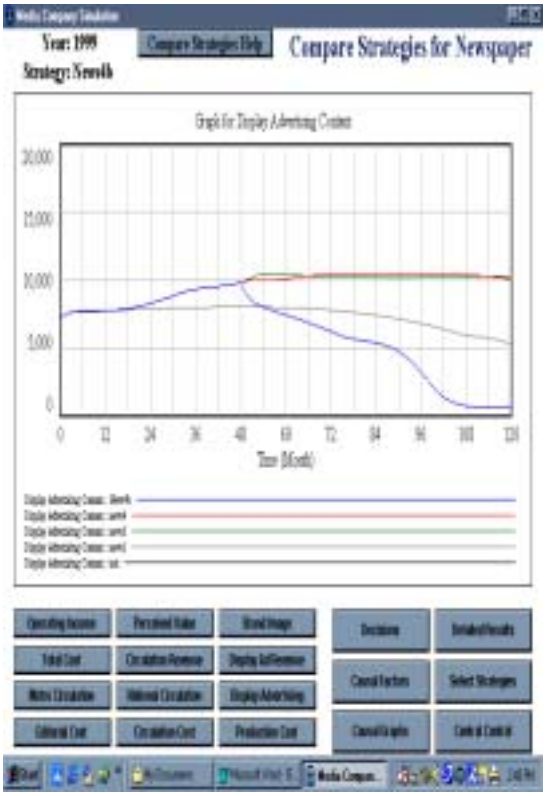

Figure 14: Display Advertising Content

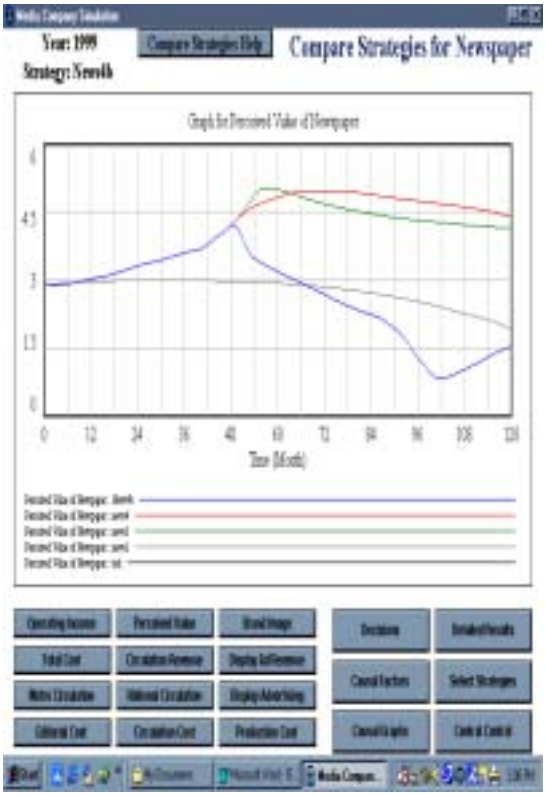

Figure 15: Perceived Value of the Newspaper

The discussion up to this point is intended to be illustrative rather than to describe a particular newspaper's experience. The examples are for an average-sized hypothetical newspaper conforming to the industry-average parameters that we determined as a result of our research. They also reflect default environmental assumptions. Our model can be readily modified on two levels. Prior to and during a simulation, it is possible to modify the environmental variables to account for such things as changes in the cost of newsprint, currency impacts, and shifts in readership to other media. On a more basic level, over a hundred of the model's parameters can be modified to reflect the conditions of a specific newspaper by means of spread-sheet input. The challenge here is not in modifying the model, but in getting a newspaper to look deeply into itself and its

information systems to come up with the appropriate parameters for the model. The next section illustrates the value of being able to change environmental assumptions.

Operating in a Harsh Environment

These simulations so far have assumed a benign environment. But the discussion earlier in the paper suggested that the newspaper industry is under pressure from many directions and is likely to lose ground to other media. This harsh environment assumed in the next simulation (Harsh1), reflects the gradual migration of readers and advertisers to the Internet. It assumes that readership shifts to online news sources by 1.5% per year and advertisers (both display and classified) shift to online sites by 4% per year. Otherwise, all other assumptions are the same as in News 1 shown earlier including the gradual aging of presses in News1? The results are shown in overview in Figure 16.

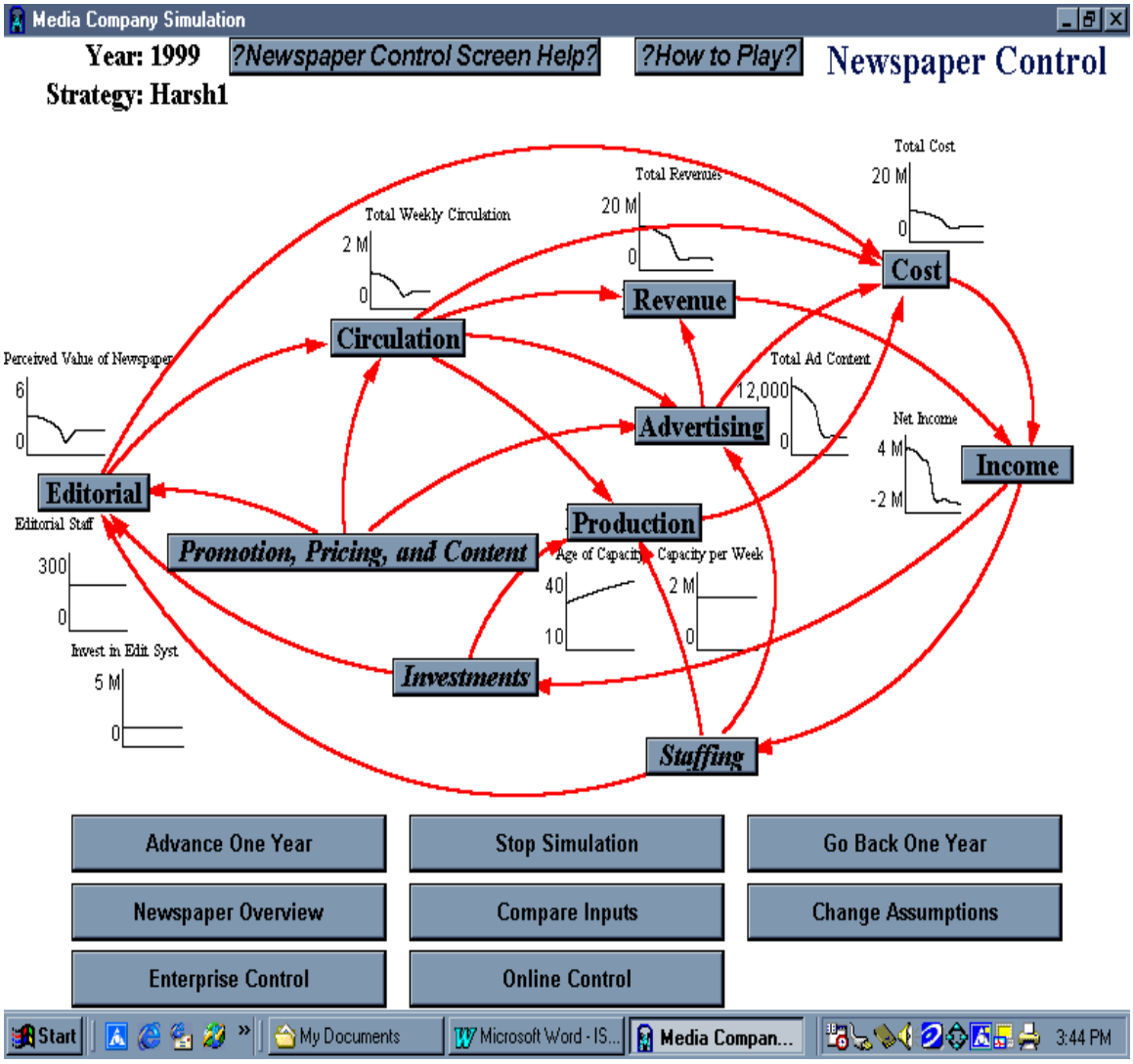

Figure 16: Newspaper Operating in a Harsh Environment (with Migration of Readers and Advertisers to Other Media)

One might expect Weekly Circulation and Display Advertising Content and Revenues to slowly degrade by roughly the same amounts as the migration in readership and advertising. Instead, there is a severe crash in all numbers around the middle of the run after several years of more gradual change. Why? This is a result of feedback loops through Weekly Circulation, Display Advertising Content, Editorial Content, and Perceived Value of the Newspaper and the downward spirals that they set off. Notice how the slow declines gradually make the newspaper less attractive to both readers and advertisers who get to a point where they suddenly start abandoning the newspaper in greater numbers. The "bounce" in several of the curves such as Perceived Value of the Newspaper is a result of the paper hitting its minimum size of 48 pages. At this point, the Ratio of Editorial to Advertising increases (only because advertising continues to disappear) and this helps to improve Perceived Value of the Newspaper and Weekly Circulation and stops the slide created by the positive feedback loops. Unfortunately, this occurs at a point where Net Income is negative and the paper is beyond saving.

These runs are a good illustration of the value of a causal model emphasizing feedback such as this one vs. a spreadsheet that does straight-line projections. A spreadsheet model might suggest only gradual changes over the entire ten-year period and result in a complacent management attitude that leaves them unprepared for the sudden decline.

Perhaps the strategy we used earlier, labeled News4, could also provide some improvement over this harsh scenario. This was the strategy in which Investment in Editorial Design and Systems and hiring of Editorial Staff was supplemented by an increase in newsstand price from 50 to 80 cents. Implementing this strategy (Harsh3) in the harsh environment yields the results shown in Figure 17 on the next page. Rather than the improvement that News4 showed over News1, Harsh3 shows no apparent improvement over Harsh1. All key variables decline over the simulation. Figures 18 and 19 provide direct comparisons with of Harsh3 (blue line) with Harsh1 (red line) for Metro Circulation and Net Income. The effect of this strategy in a harsh environment is merely to delay the inevitable rather than to improve performance. In fact, Harsh3 results in even lower Metro Circulation and Net Income.

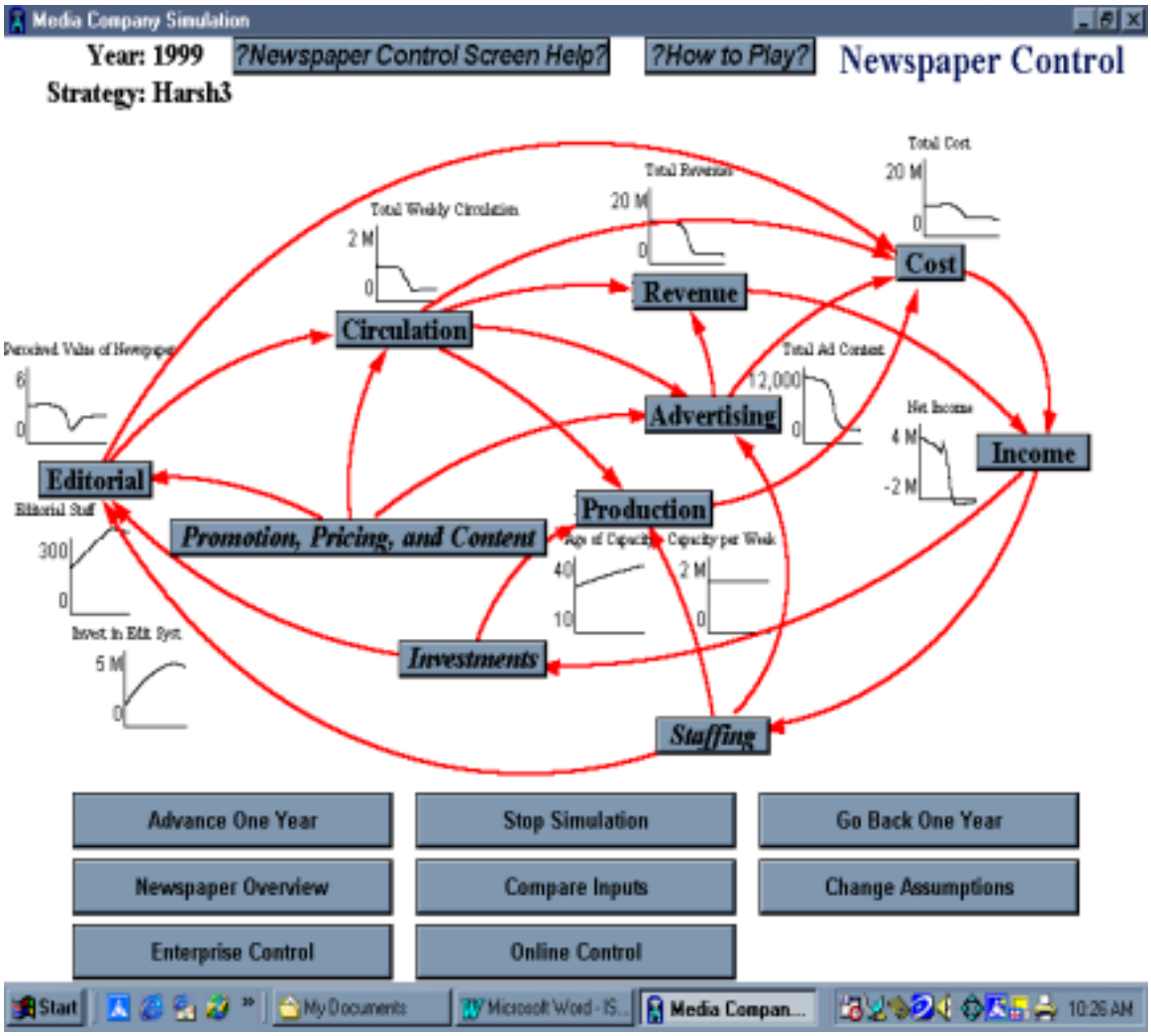

Figure 17: Results with Investment in Editorial Design and Systems, Hiring of Editorial Staff, and Increase in Newsstand Price in a Harsh Environment

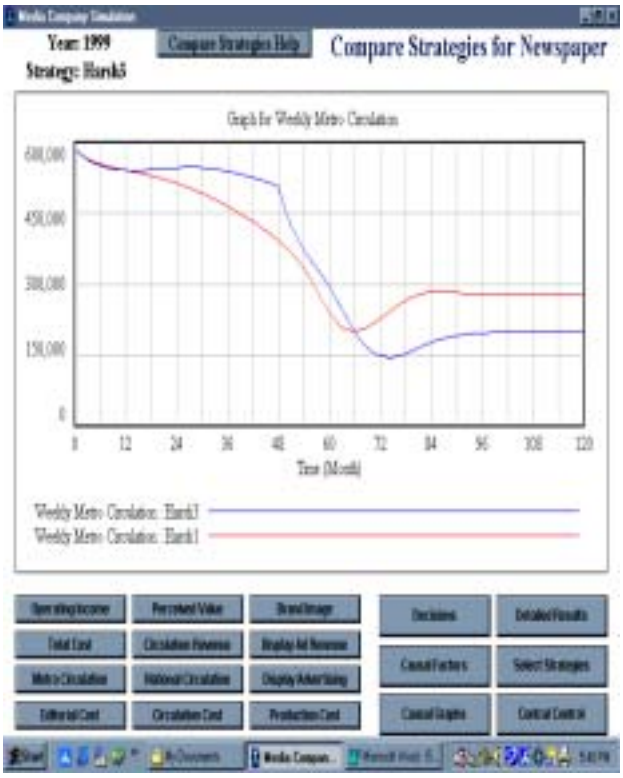

Figure 18: Metro Circulation

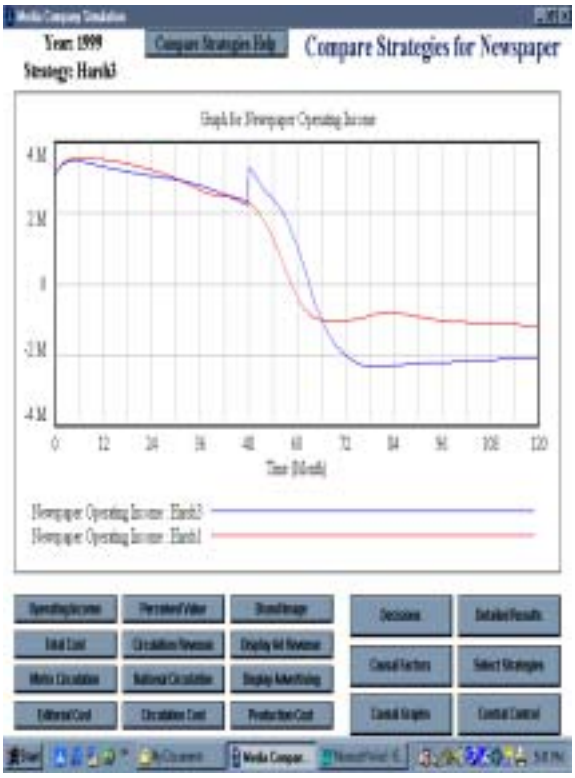

Figure 19:Net Income

Again, the vicious cycle created by the decline in readership and advertising creates a situation in which "old solutions" no longer work. It suggests that the high percentage of fixed costs in newspapers that make them profitable in stable markets leaves them very vulnerable to declines in circulation and advertising. It also suggests that viewing a newspaper in isolation is dangerous because it limits options for dealing with changes such as shifts to the Internet. Solutions that work probably need to consider the newspaper as part of a system, a larger media enterprise.

The Media Enterprise and Newspaper Diversification: The Case of Online Services

What frameworks and tools can help newspapers create viable strategies when they face such a difficult environment? Thinking of themselves as media enterprises and planning a diverse set of services provides a much larger number of degrees of freedom for planning. Figure 20 depicts an enterprise-level view. Moving up to the enterprise level enables us to deal with an entirely new set of strategy questions involving diversification toward other media such as radio and TV stations, other print media such as magazines, and online services. It shows, for example, how a newspaper might interact with a family of online services, the focus of our work in the late 1990's when it appeared that there might be a major transition from print to online for metropolitan newspapers all over the world. With some modification, any such diversification strategy can be examined in a similar manner. While the online "boom" of the 1990's did not pan out as expected, this capability can be helpful to newspapers for any diversification strategies. Some of the

principles we discovered relating to online services could, we suspect, be applied to any other form of diversification.

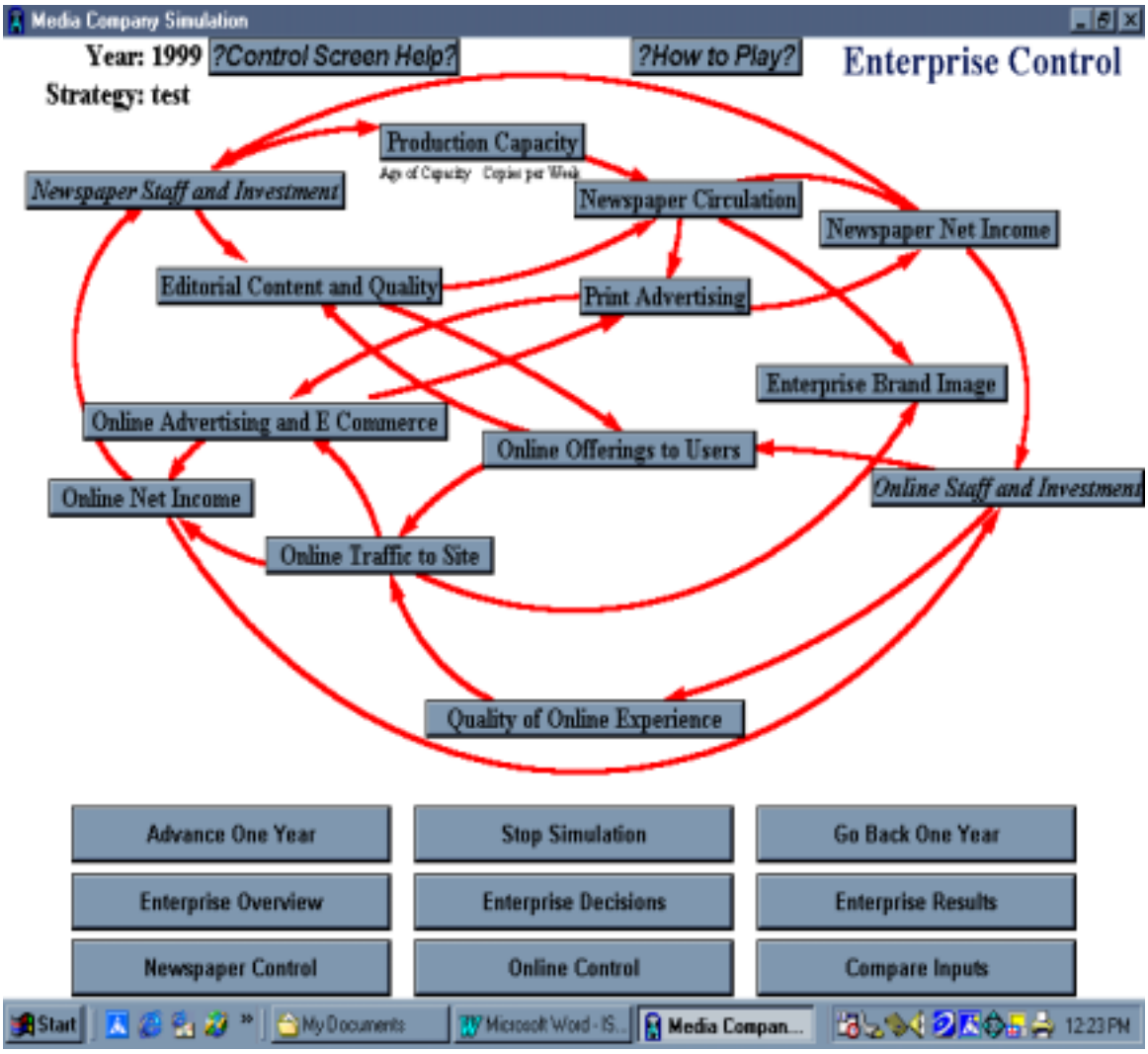

Figure 20: Enterprise-Level View of a Newspaper Company

What would be the result if a newspaper made a series of investments in online services with the intention of capturing the readership it loses under the set of simulations above with assumptions about a harsh environment? There is a decision screen at the enterprise level for creating diversification strategies. For example, it enables us to set up an "investment fund" based on a fraction of profits and then allocate the proceeds of that fund to the online activity, other activities such as local community newspapers, and the metropolitan newspaper itself. That decision screen also deals with management hiring, allocations of management time, and other issues alluded to earlier such as the degree of integration between the editorial activities of the newspaper and online activity.

Figure 21 displays an overview of the results of a simulation in which there is an investment fund that starts off at about $10 Million and is added to by 10% of profits

each year. In this strategy, we allocate only 10% of the fund to the online business, 10% to other businesses such as community-level newspapers, and 80% reinvestment in the newspaper itself. This could reflect the investment patterns of a conservative, newspaper-dominated media enterprise. We fund the strategy as a newspaper with only a half- hearted commitment to the Internet might. (The conversation in the Boardroom might go something like this. "A consultant has suggested that we must grow an online business, but we don't want to disappoint our stockholders and we must reinvest in the newspaper to protect it from this online nonsense. Besides, if we invest less in online, it only means that business will become profitable a bit later.")

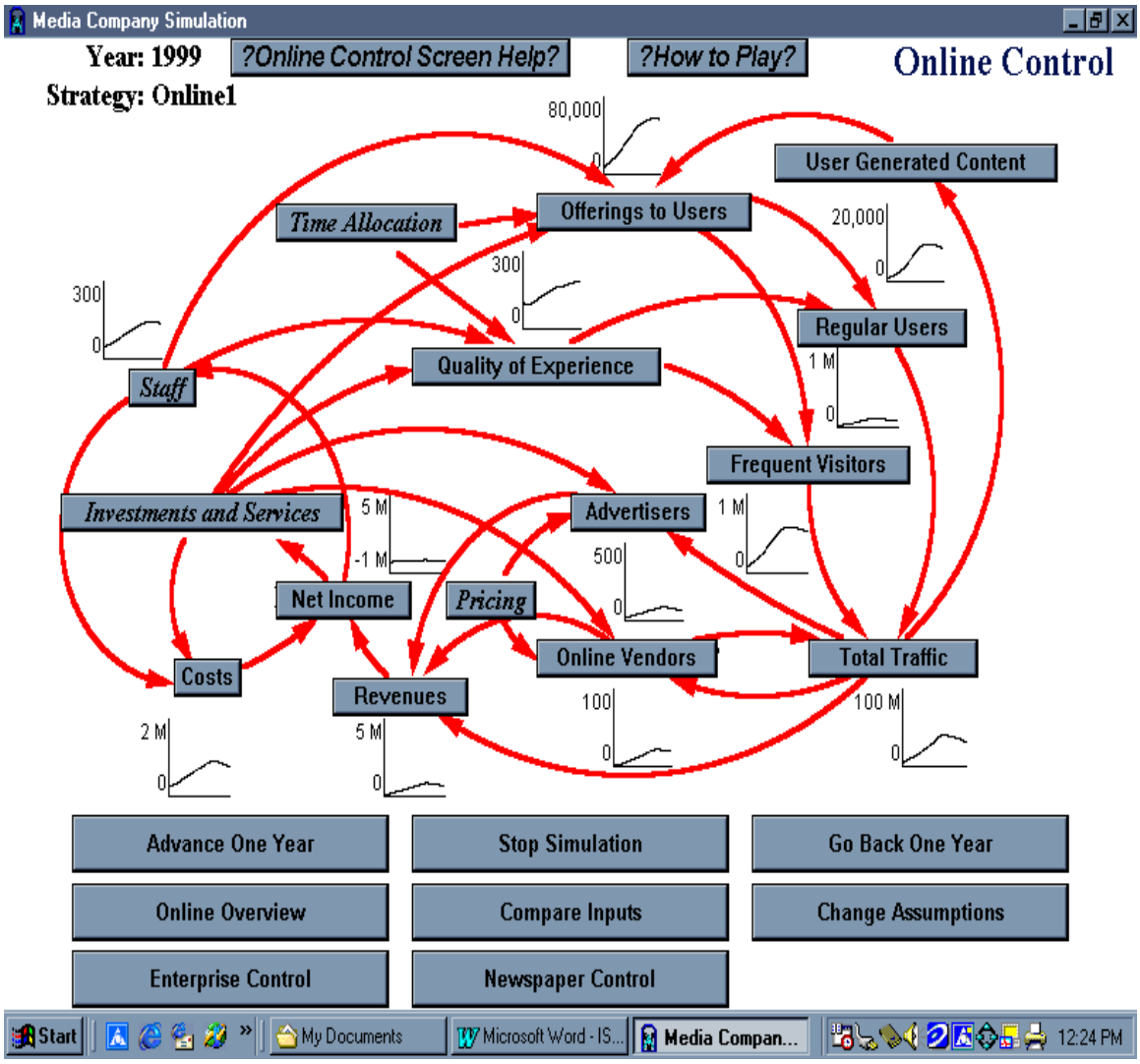

Figure 21: Overview of Online Module with Conservative Investment Strategy

The screen shown in Figure 21 focuses on the online business just as the newspaper control screen shown earlier focused on the traditional print business. Figure 21 shows how investments in staff, equipment, and purchased services enable the online business to create Offerings for Users (content) and Quality of Experience which, in turn, attract

Frequent Visitors and Regular Users who generate Total Traffic. Traffic, in turn, attracts and holds Advertisers and Online Vendors who help the business generate Revenue and Net Income.

The strategy involves goals for hiring what appears to be respectable numbers of staff spread across different functional areas such as technical development and online editorial and for developing lucrative revenue-producing services such as online vending (e-commerce) and online classifieds. However, budget constraints built into the model keep the online activity from meeting all of its goals.

The amount available to online under this low funding scenario (including its own revenue stream which is low at the beginning) will be considerably less than the budget calls for and the actual spending, hiring, activities developed, etc. will be reduced by the budget constraint. The result is a simulation in which there is a brief peak in online activity that dwindles later in the run. Offerings to Users top out and cause Total Traffic to peak and then decline. While there are a number of Frequent Visitors, limited content constrains the number of Regular Users who are the truly important generators of traffic. Limited traffic and a failure to create revenue-producing activities limits Revenues from the online business. Income produced by this business never makes it to break even during the simulation.

For the business to be successful, online staff must grow rapidly in order to produce growing amounts of content and applications to attract users in an environment where these offerings quickly become obsolete. Online staff does not grow rapidly enough, in this simulation with too little funding, to overcome this rapid obsolescence and produce content and quality of experience that can keep up with competitors' growth rates in offerings and performance that are assumed to be 25%. This staffing shortfall results in falling market share and traffic that stalls and then drops as our online business falls behind its competitors. Revenues peak and then drop as well, depriving the online business of an alternative source of funds for investment. These declines are compounded and accelerated by staff becoming disenchanted by slow/no growth and leaving and having their productivity reduced by turnover.

Rather than a partial success, the inability to achieve a critical mass results in decline and essentially a complete failure. The feedback loops through staffing, content and applications, traffic, commercial revenues, and further investments in staff that would produce growth in a successful simulation help to hasten decline and failure if under investment keeps a critical mass from being realized. In the next simulation, we try a strategy in which 50% of the investment fund is put into online rather than the 10% invested previously. Will this be enough to achieve critical mass and profitability?

As indicated, everything in this simulation (Online 2) is the same as the in previous one (Online1), but 50% of the investment fund is devoted to online rather than 10% and nothing is invested in the "other" businesses. The effect is to be able to fully fund the ambitious staffing strategy and grow staff rapidly in all of the critical functions. As you can see in Figure 22, the results are dramatically different with a successful online

business that reaches a level of profit comparable to that of the newspaper at the beginning of the run. The newspaper is losing significant money by the end of the run, so online profits are essential for survival. Online profits are coming on about half the revenues that the newspaper required to produce the same level of profit since there is no need for presses, paper, trucks, etc. By the end of this simulation, the total online staff is around the same size as the newspaper's editorial operation alone.

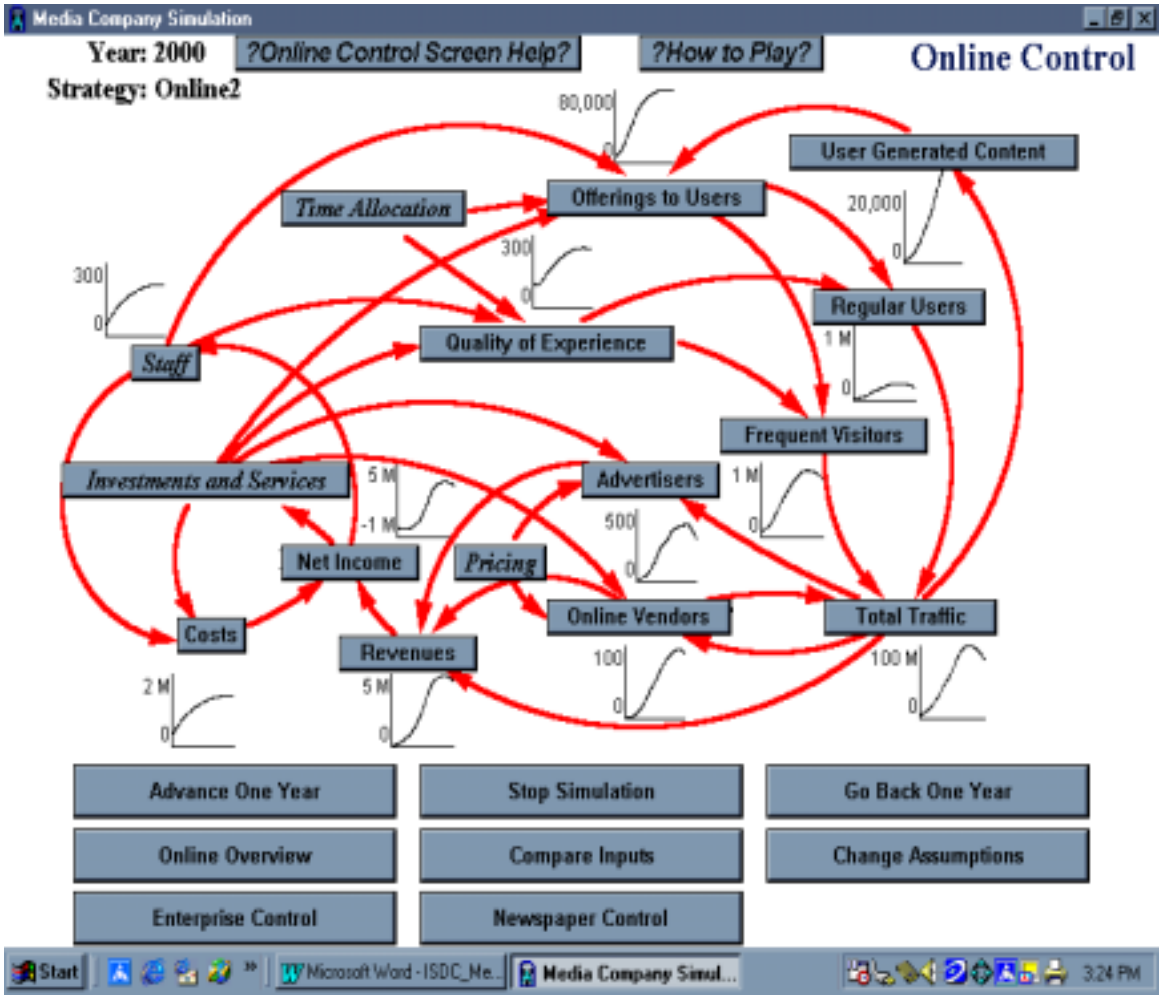

Figure 22: Overview of Online Business with More Aggressive Investment Strategy

Why is Online2 is a profitable run where Online1 is a disaster? The comparative graphs in Figures 23-26 highlight the differences between the two strategies in more detail. Depth and Breadth of Offerings is significantly greater for Online2 (blue line) than Online 1 (red line). As a result, more Regular Users are attracted and Total Traffic and Revenues are higher and there is a considerable jump in Net Income. Under the detailed graphs, examine the one under "Usage" that shows the relationship of Market Share and Ratio of Offerings to Competitors to see how they compare for each of the runs (much higher in Online2). The feedback loops through staff, offerings to users, traffic, revenue producing applications, revenue, and the ability to fund more staff (that helped to speed

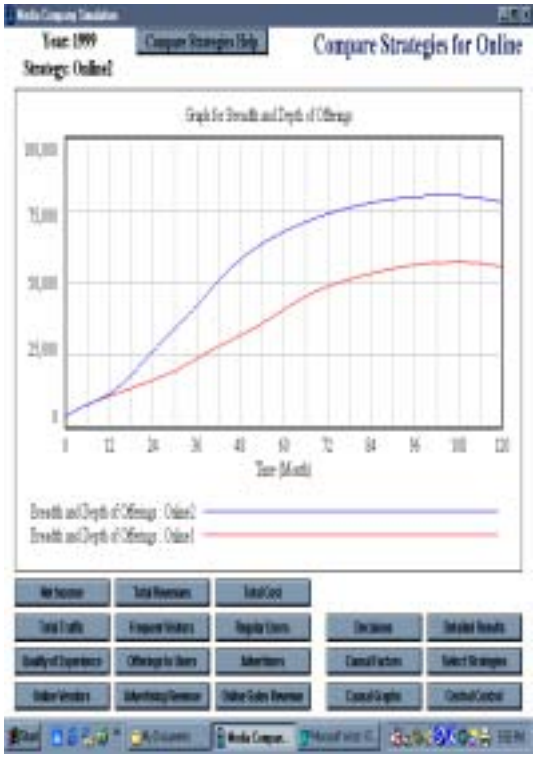

Figure 23: Breadth and Depth of Offerings

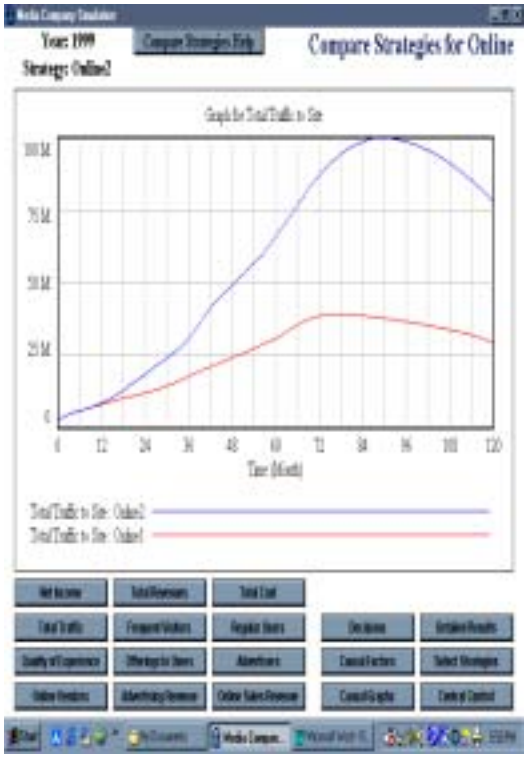

Figure 24: Total Traffic to Site

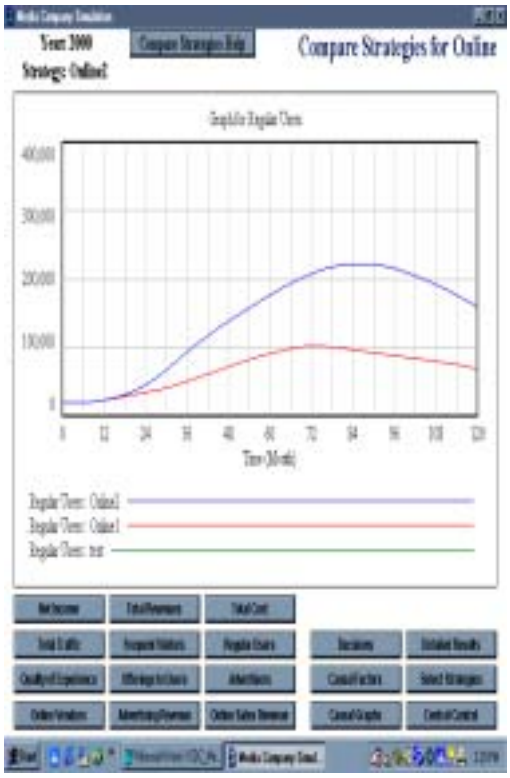

Figure 25: Regular Users

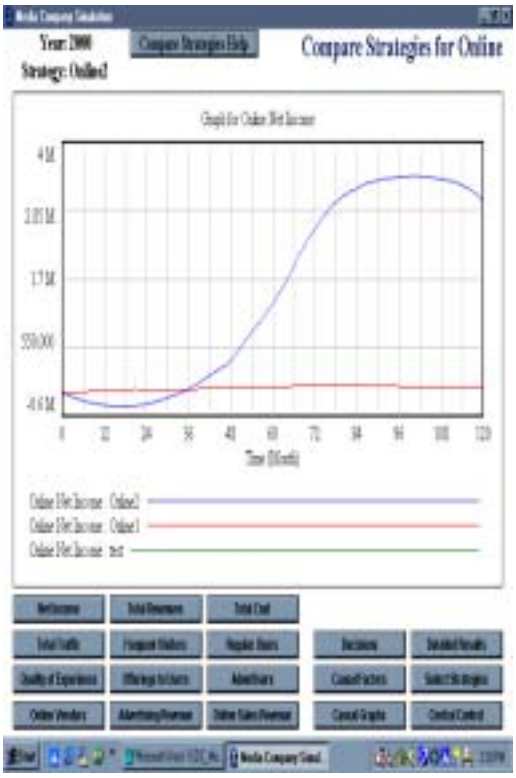

Figure 26: Online Net Income

up the decline in Online 1) produce spectacular growth in this simulation that helps to assure the success of the online site.

This strategy also succeeds because it is well-balanced, hiring sufficient numbers of people in each department and allocating their time well across different functions. The result is that traffic develops at the rate it needs to and revenue-producing activities are in place at the right time to harvest dollars from that traffic.

As we indicated earlier, the results achieved in Online2 were very rare for the online businesses of newspaper companies. The purpose of this example was to show how the simulator can be used as a tool by newspaper companies to examine diversification strategies. It also illustrates a principle that applies to any type of diversification that might be attempted by a newspaper. New businesses being established in competitive markets must have a life of their own and the resources required for them to grow and thrive. They cannot be viewed merely as appendages of the print business.

Newspapers' Reactions to the Simulator

The most extensive use of the simulator was made at El Universal in Caracas that served as the site of its development. A workshop using the simulator with management staff had exactly the desired effect in helping the staff to see the limitations of silo-level thinking and the importance of strategies conceived with the entire enterprise in mind. The simulator also was used for more limited workshops and demonstrations at a number of other newspapers and chains. At the Miami Herald, in a session with the group responsible for its online services, there was a sense that the model replicated some of their past experience very well. The Herald's online staff also felt that the model offered deeper insight about why things happened as they had in the past and what strategies might help them going forward.

In another workshop with the staff of the Belo newspaper chain, there was also the sense expressed that the simulator could be a valuable tool for helping newspapers better understand the online services business and the requirements for an effective transition to it. There were additional presentations to the staffs of the Arizona Republic and Arizona Central Group of newspapers, the Trinity Mirror Group, and potential industry partners such as Atex Corp. and Northern Light. All of these meetings produced favorable reactions that this was a new approach that could help newspapers deal with the many strategic problems they were facing.. Presentations at the annual conference of Ifra, an international association of newspapers, in Amsterdam in October of 2000, were also enthusiastically received.

Despite these favorable reactions and the potential uses of the simulator, there was not the widespread adoption that its developers had hoped for. There may have been several reasons for this. One is that the anticipated shifts from print newspapers to online delivery of the news materialized to only a very limited extent. Planning for this shift had been an emphasis of the simulator and a hoped for selling point. Another reason is that newspapers, by their very nature, are operationally oriented and focus on getting the

paper out every day. There is only limited appreciation for strategy and for long-term thinking. It was therefore difficult to get them to spend money on a tool for developing strategy.

Finally, though newspapers are basically the same kind of business throughout the world, they do have some important variations in their products and how they are manufactured and distributed. Reflecting the differences among newspapers was important for the simulator to be useful as a planning tool, which would increase its value beyond simply being a learning environment. Newspapers we spoke with wanted a certain amount of customization, but were unwilling or unable to pay for custom model building. Expanding the set of pre-programmed options offered in the simulator would have taken more time and money. The latter was in short supply since the simulator was being developed at a time when the venture capital bubble of the late 1990's had burst and capital was hard to come by for Internet-oriented ventures. The lack of capital also kept us from engaging in the lengthy customer education and selling effort required for any new technology that is unfamiliar to an industry.

Conclusions

This paper has described a simulator for evaluating newspaper strategies. It's principal contribution is to allow newspaper companies to overcome the traditional view of managing a set of functional silos and enable them to develop strategies for the entire enterprise based on how those functional areas are likely to interact over time. They can also test strategies under a variety of different circumstances to see which ones are most resilient and don't depend on conditions being "just right" in order to succeed. One purpose for the simulator's development, managing the transition of the print newspaper to largely online services, has proven less relevant with the passage of time. The online example has demonstrated that a simulator can nonetheless be a valuable tool for newspapers that want to diversify their business activities and need to understand the investments and policies required for the new venture to succeed and also how the venture should interact with the existing newspaper business.

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References

The simulator described in this paper and results of a number of simulations can be downloaded from the following web site: http://cronkite.pp.asu.edu/jagis2/simvenweb3/ The site also includes other relevant information on the newspaper industry.

Grossler, A. Structural Transparency as an Element of Business Simulators. In 16th International Conference of the System Dynamics Society, Quebec '98, (pp. 39). Quebec City, Canada: System Dynamics Society.

Hall, R. I., A System Simulation Model of a Magazine Publishing Company. In 1973 Summer Computer Simulation Conference. Montreal: Simulation Councils, Inc. (P.O. Box 2228, La Jolla, CA 92037).

Hall, R. I. (1974). Managing a Magazine Publishing Company--A Decision Making Game. In Constructing Instructional Simulation Games (pp. 22-29). U. of Manitoba, Natural Resource Inst.

Hall, R. I., A System Pathology of an Organization: The Rise and Fall of the Old Saturday Evening Post. Administrative Science Quarterly, 1976, 21(2), 185-211.

Hirsch, G. B., & Immediato, S. Design of Simulators to Enhance Learning: Examples from a Health Care Microworld. In 16th International Conference of the System Dynamics Society Quebec '98, (pp. 2). Quebec City, Canada: System Dynamics Society.

Hirsch, G. B., & Kemeny, J. M.. Mastering the Transition to Capitation. Health Care Forum Journal, 37(3 May-June), 89.

Machuca, J. A. D., Castillo, J. C. R. d., Carrillo, M. A. D., & Zamora, M. d. M. G.. Our Ten Years of Work on Transparent Box Business Simulation. In 16th International Conference of the System Dynamics Society Quebec '98, 1 (pp. 5). Quebec City, Canada: System Dynamics Society.

Senge, P. M., & Lannon, C. Managerial Microworlds. Technology Review (July, 1990).

Sterman, J. D.. Teaching Takes Off: Flight Simulators for Management Education. OR/MS Today (October, 1992), 40-44.

Sterman, J. D. (1988). People Express Management Flight Simulator: Simulation Game, Briefing Book, and Simulator Guide. Available from author, MIT Sloan School of Management, Cambridge, MA 02139.

Sterman, J. D. (1988). Strategy Dynamics: the Rise and Fall of People Express (Memo No. D-3959-1). MIT System Dynamics Group.