

Success Under Adversity

Differentiating Leaders From Laggards During Hard Times In The Printing Industry

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Research Aims and Overview

ORGANIZATIONAL PERFORMANCE UNDER ADVERSITY

All organizations, no matter how strong or stable, can face unexpected adversities at any time. Several forces—all at work in the printing industry—increasingly conspire to subject organizational destinies to forces beyond their control. As the pace of technological change has increased rapidly and continues to increase ever more rapidly these changes can render organizational competencies moot with lack of warning and merciless speed. Social change, if not usually quite so rapid, can be equally dramatic. Highly capable newspaper printers, for example have seen revenues decline in recent years due to sharply declining circulation and print-pages. As global competition increasingly becomes a part of business life, printers once subject only to local competition are increasingly subject to regional, national, and international competition. And any organization anywhere, no matter how strong or well prepared can face unanticipatable adversity, such as a natural disaster or terrorist attack.

When an organization performs poorly or fails to survive, not only owners and workers are hurt: constituents are underserved and resources are squandered. Takeovers and bankruptcies function crudely for reallocating resources, and result in disintegration of intellectual capital as teams disperse.

Moreover, organizations and institutions are more than economic entities—they are vessels into which we pour energies and passions. Their untimely demise results in painful—and unnecessary—loss. For these reasons, it is important for an organization to develop not just technical and strategic competencies, but also skills of resilience.

Despite this importance, few empirical studies have been conducted, and none, as far as we know, specifically exploring successful response to adversity other than a single case study (Freeman, Hirschhorn, & Maltz, 2004). We attribute this partly to an understanding in organization theory that organizations are not resilient—at least not in the positive sense of being able to respond effectively to catastrophic events. To the degree organizations have been described as “resilient,” it is in the sense of inability to change patterns and processes, i.e., processes resist change (Molinsky, 1999).

Pragmatic problems also hamper the study of adversity. Under conditions of adversity, financial and cognitive resources are stretched, and research funding is hard to find. Students are likewise interested in industries where employment prospects are strongest. More generally, we all love a winner and shun a loser. People want to know the secrets to success, not how to deal with loss. Our resilience research suggests, however, that the most important secret to success is learning how to deal with loss.

THE PRINTING INDUSTRY AS A RESEARCH DOMAIN

The printing industry represents an outstanding opportunity to launch a program of resilience research. The entire industry faces adversity due to several reasons.

Demand for traditional print products is down. U.S. daily newspaper circulation, for example, in 1973 was 63,147. Over thirty years, it has steadily declined so that in 2002, it was down to 55,186. From 2000 to 2002, newsprint consumption decreased 14% from 12.039 to 10.395 million metric tons (Newspaper Association of America, 2004).

Research Aims and Overview

Moreover, many print clients can increasingly meet shrinking printing needs in-house through sophisticated, yet easy-to-use desktop publishing systems.

At the same time that demand is falling, productivity advances increase supply, resulting in relentless price-cutting. Firms are increasingly vulnerable to competition, as regional firms challenge local firms, and national firms challenge regionals. In this environment, clients systematically play one printer against another demanding continual price cuts. Printers allege that suppliers in a bleak market flood the market with productivity-enhancing equipment, adding to chronic over-capacity and further pressuring profit margins.

The net result is that printing firms, once highly secure, are now extremely vulnerable. The number of establishments in printing and related support activities has decreased from 42,863 in 1997 to 37,168 in 2002 (U.S. Census Bureau, 2002).

The U.S. printing industry is a generally attractive research domain with a large pool of firms containing extensive variation. Despite adverse conditions, many firms are doing very well. Access to statistical records of performance over many decades has been made available through the generous support of the Printing Industries of America/Graphic Arts Technical Foundation (PIA/GATF).

OVERVIEW OF PAPER

The goal of this paper is to understand the factors that contribute to resilience in the printing industry. We begin by outlining a theoretical model of resilience and a method for conducting exploratory research. The heart of the paper is the presentation of survey and interview data to test and build upon the theoretical model. We conclude with plans for future research.

Theory: Principal Components of Success under Adversity

In a case study of Sandler O’Neill & Partners—a firm that rebounded with extraordinary vigor and success after the September 11, 2001 attacks—Freeman, Hirschhorn, and Maltz (2004) develop a working theory of Success under Adversity (SuA) as a function of purpose (P), cognitive capabilities (CC), slack resources (SR), organizational structure & culture (OC&S), and psychological containment (PC).

Beginning Theoretical Proposition:
 $SuA = f(P, CC, SR, OC\&S, PC)$

DEFINITIONS AND EXPLANATIONS OF THEORETICAL CONCEPTS

Success under Adversity (SuA)

SuA is used in distinction to “resilience.” Resilience has a broader meaning, implying dealing with the unexpected or unanticipatable. In the Sandler O’Neill case, we studied a firm that was dealing with an unanticipatable tragedy. In the printing industry, conditions are neither tragic nor unanticipatable, at least no more so than those that any firm faces, so it makes more sense to speak of Success under Adversity.

Purpose (P)

Purpose emerges from a strong, conscious motivation. Organizational purpose results from clarity in organizational function—what its role is and whom it serves, and strong desire for organizational success on the part of management and employees. This desire emerges from economic, moral, interpersonal and/or professional incentives. Freeman, et al. (2004), attributed Sandler O’Neill’s remarkable performance to an alignment of purpose when the extraordinary economic opportunities ever-present in investment banking were complemented by the

moral and interpersonal purposes of building an organization that could support the needs of the families of their murdered co-workers, and a crusade to not let the terrorists bring the firm down. Professionals and partners in the group were also motivated by the opportunity to build a department or organization anew—the way they felt it ought to be done—as well as to pursue other professional challenges. The results of this alignment of purpose were phenomenal: a decimated firm rising from its own ashes to not only recover, but to rebuild a once-strong firm, far stronger yet, all the while mourning their losses and generously support the families of their colleagues.

Cognitive Capabilities (CC)

Weick and Sutcliffe (2001) and Sutcliffe and Vogus (2003) identify cognitive capabilities as a key to organizational resilience. Studying high reliability organizations (HROs) such as nuclear power plants and aircraft carriers, they observe an extraordinary capacity to deal with unexpected events and attribute this to organizational learning, conceptual slack, and the ability to process feedback quickly. They find adaptation in these HROs to be a highly conscious process of detecting deviation from expected results and misalignments with the environment, drawing upon whatever cognitive abilities are required to understand, and testing actions that might help ameliorate the condition. For these resilient firms, the ability to predict what may happen is less critical than to detect actual small problems and react thoughtfully to prevent them from spinning out of control.

Cognitive techniques of resilience include mindfulness (Langer, 1989a, 1989b), constructive sensemaking (Weick, 1995), entrepreneurial orientation (Jelinek & Litterer, 1995), and improvisation (*Organization Science*, 1998; Freeman & McLeod, 2004).

Slack Resources (SR)

SR includes financial and social capital, as well as reserves of technical skills and management capabilities. Sandler O'Neill could recover so effectively because it could draw upon tremendous financial reserves, many relatively young (40s and 50s) semi-retired partners for leadership and technical skills, and a strong support network of friends, family, and sympathizers for space, credit, labor, legal help, etc. Moreover, the nature of the crisis and the way the firm managed the resulting spotlight provided even greater access to resources.

Organic Structure & Culture (OC&S)

Perrow (2003) contends that structural considerations are critical to resilience, that mechanical systems augment the impact of disasters, whereas organic systems mitigate them. By mechanical, he means hard-wired, unidirectional, efficient, and dedicated (single purpose) connections with hierarchical structures.

Organic systems, in contrast, contain “web-like characteristics:” high redundancy, quick replication, dormant or excessive resources, and decentralized structures with redundant nodes and distributed authority. The ability of Sandler O'Neill to rapidly reconstruct seems attributable in large measure to organic systems: workers who know their colleagues' business (redundancy); an adaptive ability generated from trust, familiar friends and supporters (dormant resources); and a self-regulating work force (decentralized structures with distributed authority).

Weick (1993) attributes success under adversity to virtual role systems. Analyzing a firefighting disaster, he observes that the firefighters were unable to adapt to the unforeseen circumstances because they were locked into particular roles with crystallized structures. When separated from their foreman in the face of an unexpectedly ferocious fire, they could not do what he did, which was to shed his tools and improvise an escape fire (setting fire in the face of the approaching maelstrom and lying in the ashes). Had the firefighters been able to revise their roles or assume command for themselves—they were no longer fighting a fire they were able to contain and were now on their own—they might have likewise improvised a solution that could have allowed them to survive.

Psychological Containment (PC)

For all Sandler O'Neill's strengths, grief and anxiety could easily have undermined efforts. It did not because the firm, using external clinical expertise, managed to allow employees to appropriately grieve and express their anxieties without permitting either to consume them. Grief and anxiety were contained so that employees could focus on the tasks at hand. PC may not take on the same urgency and dimension with regards to economic adversity, but there is stress felt during difficult economic times, and its containment may be an important factor in SuA.

Methods: Exploratory Research

Our empirical investigation of SuA begins with an analysis of a survey conducted by GATF and unstructured interviews with industry experts and select printers.

SURVEY DATA

Printing Industries of America/Graphic Arts Technical Foundation (PIA/GATF) is the major repository of information about the printing industry. It has over 8,000 members, and has been collecting and publishing detailed economic and technical data on the industry since 1920, producing an annual financial ratios report each year. The surveys it now conducts also include a quarterly market data (sales, etc.) report, compensation and public policy surveys in alternating years, and a technology benchmarking every few years.

In 2002, it surveyed strategic and operational characteristics for the first time. PIA/GATF sent a comprehensive “Strategic Operating Assessment” to past participants in PIA Ratios surveys, with the purpose of isolating key differences in strategy and operations between profit leaders, PIA Ratios participants in the top 25% of profitability, and profit laggards, participants in the bottom 25% of profitability. Six hundred firms were surveyed—300 profit leaders and 300 profit laggards; 109 leaders and 74 laggards responded, an overall response rate of 31%.

Under ordinary conditions, this survey would not be specifically relevant to SuA, but it was conducted in 2002, a particularly bad year in the printing industry. U.S. printing shipments declined by 2% in 2001 and stayed flat in 2002. As shown in Figure 1, average profits plunged from 3.1% in 2001 to 1.0% in 2002, the lowest in over 30 years. In this difficult environment, profit leaders nevertheless

had an average profitability of 8.0%, while profit laggards lost money. We reviewed and re-analyzed the data for significance in light of theoretical considerations.

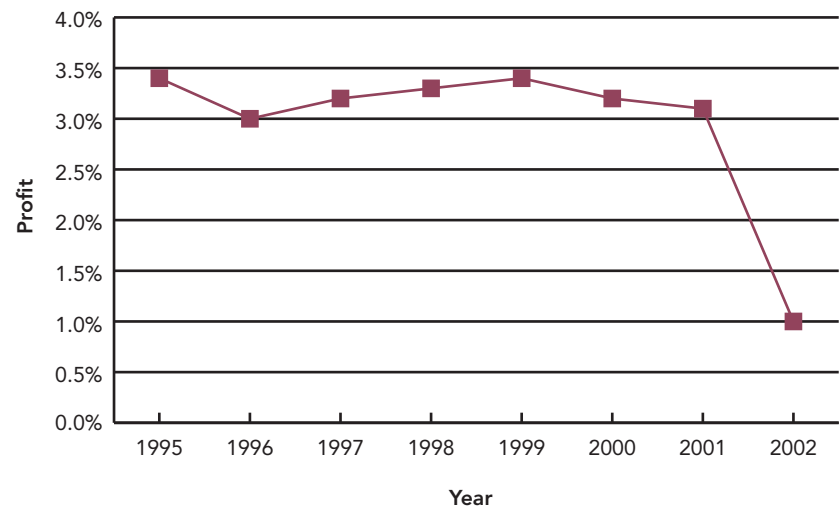


Figure 1. Average profit for printers, 1995-2002 (PIA Ratios).

Limitations

Our methods are not ideal in that the nomological net of concepts and indicators is after-the-fact, rather than theory driven. As a result, we have weak construct validity. Success is operationalized one-dimensionally as profit. We have no indicators at all for three variables—OS&C, SR, and PC.

Internal variance is weak because the survey is a single snapshot. Thus, it is difficult to say in most cases what caused what, or anything about how these variables might be changing over time. Most important relative to the research questions, we cannot do more than speculate about what organizational attributes are particularly valuable under conditions of adversity, because we can't compare the 2002 results with those of good years.

Methods: Exploratory Research

We also have limitations in establishing strong relationships between our constructs because profitability is a single dummy variable rather than continuous, depriving us of most of our potential variance.

Nevertheless, despite limitations, interesting correlations are established. We can use these findings to create questions for another survey that can be designed to answer our research questions more confidently.

INTERVIEWS

For the qualitative portion of the study we interviewed 10 individuals identified as industry experts about what factors they perceived as important to SuA in the printing industry. These interviews were transcribed when possible; otherwise, detailed notes were taken. Notes and transcriptions were then coded using an iterative process to allow common themes to emerge from the data.

Survey Findings

PURPOSE (P)

Our theory proposed two broad components of purpose: individual incentives for organizational success and clarity in organizational function.

Individual Incentives

One component of individual motivation is economic incentive. When employees have an economic stake in an organization, they'll help it survive rough times rather than bail out at first opportunity. The survey question that most directly pertains to purpose has to do with employee participation in profits through ownership, profit-sharing plan, or bonus system. This proves to be one of the most significant differentiators in the survey; whereas only 40% of laggards offer some participation to all employees; more than 60% of leaders do (Table 1).

Organizational Function and Strategic Clarity

One might suppose that under adverse, changing conditions, a highly flexible, general strategy would be preferable to a more precise one, and indeed this is one of the classic themes of strategy (Thompson, 1967). Table 2 survey data reveals, however, that profit leaders were more likely to commit to a simple basic strategy of specialized low-cost or high-value added. What might seem to be the most flexible group, general commercial printers, were more likely to be laggards.

The data suggests that having a strategy doesn't lock a firm down so much as provides some direction. Just as a boat propelled forward will do better in a storm than one that lets the waves and wind do what they will to it, apparently printers oriented in a direction, doesn't matter which, do better than those without an orienting strategy.

	Management	Sales*	All employees*
Leaders	76%	62%	61%
Laggards	66%	38%	40%

* T-Test shows a significant difference in means. Results are significant to the .05 level.

Table 1. Percentage of profit leaders and laggards with profit sharing/bonus plan

	General commercial printer	Specialized low-cost printer	Specialized high-value added	Other
Leaders	63%	10%	22%	5%
Laggards	72%	5%	16%	11%

Table 2. Firm strategy

COGNITIVE CAPABILITIES (CC)

One interpretation of the correlation between reporting a strategy and profitability is reporting that a strategy beyond general commercial printer indicates simply that management is thinking—a cognitive capability. It may be that the strategy doesn't work out, but the fact that they have one indicates that they've given the matter thought—and that they're thinking. These cognitive processes makes them more sensitive to what they're doing, what's happening in the world, and how the two fit together; and, ultimately, more capable of choosing a strategy that will work than the general commercial printer who leaves their fate to the elements.

Survey Findings

Cognitive capabilities, however, while sounding nice in the abstract, could mean any of a variety of concrete practices. The survey allows us to measure the impact of technology adoption, service capabilities, and training programs.

Technology Adoption

A common perception in the printing industry is that investment in technology is a key to success. Small companies often attribute poor performance to an inability to adopt new technologies that they imagine their more successful competitors do. Yet surprisingly enough, the number of technologies adopted is negatively correlated with profitability. Profit laggards on average used 5.15 of the 11 technologies surveyed, compared to only 4.76 for the profit leaders. Significantly more laggards used digital printing (39% versus 27%); no technology was used significantly more by leaders. These numbers may actually understate the actual difference because leaders are on average much larger than laggards (28% of leaders in the study had more than 100 employees; only 11% of laggards did); in other words, laggards tend to be smaller firms trying to manage greater numbers of technologies.

Service Capabilities

One might also equate greater service capabilities with resilience and the ability to withstand change and adversity. This is especially true in the printing industry where demand for core capabilities has declined, and many of the most successful printers have adopted high-value added ancillary services that allow them to differentiate and grow despite adversity. However, as with technology adoption,

the quantity of ancillary services provided is negatively correlated with profitability. Profit laggards on average provided 5.82 ancillary services, compared to only 5.21 for the profit leaders. As with technologies, we have notably poor performance on the part of smaller firms trying to manage greater numbers of services.

Education

In contrast to technology adoption and service capabilities, educational expenditures are positively—and highly—correlated with profitability. In fact, the survey’s single biggest differentiator between leaders and laggards is the presence of formal training programs for top management and administrators.

Training and education may help in other ways than simply improving the organizational skill base. Freeman, Hirschhorn, and Maltz (2004, December), found that professional incentives could be highly motivating to individuals; likewise, as we learned in our interviews, such expenditures are an important signal of support.

PSYCHOLOGICAL CONTAINMENT (PC)

One question on the study pertains to containment of anxiety. Economic hard times for the firm will relate to lower sales and salespeople are likely to see commissions fall. If they have a salary, at least they can count on some secure income. If not, salespeople may bear more risk than they can afford; hence, they may not be able to focus on their work, and may devote their energies to seeking other employment.

	Percent of payroll costs devoted to training and education*	Formal training programs for:			
		Top management*	Administrators*	Production/technical workers	Sales/customer service*
Profit leaders	3.82%	14%	10%	36%	39%
Profit laggards	1.73%	2%	1%	26%	21%

* T-Test shows a significant difference in means. Results are significant to the .05 level.

Table 3. Training practices of profit leaders and laggards

Table 4 shows the correlation. Profit laggards are more likely to use commission-only systems. Profit leaders are more commonly use a combination salary-plus-commission system (and often include a component based on overall organizational performance, thus motivating commitment to overall firm well-being).

	Straight salary	Salary + commission*	Commission only	Other
Profit leaders	17%	50%	32%	8%
Profit laggards	18%	35%	43%	8*

* T-Test shows a significance in means. Results are significant to the .1 level. Rows do not sum 100% because "Other" is usually (but not always) in addition to one of the other categories.

Table 4. Salespeople compensation systems

Interview Findings

INTERVIEW THEMES

Industry experts and the printers themselves hold a wide range of opinion regarding what makes some printers survive difficult economic times while others fail. Four themes, however, ran through most or all of the interviews that we conducted: employee investment, strategic investment in and adoption of new technologies, a flexible customer focus and leadership/vision.

Programs to Increase Employee Commitment

Investment in employees was cited as a critical factor in resilient firms. One form of investment is simply communicating with employees. Printing industry sales and marketing consultant Dennis Castiglione told us that one of the first questions he asks of management is whether they share the financials with their employees. He says, “If the answer is no, I know that this is an organization that I am going to have a great difficulty moving forward.” Communication is essential to creating a strong company culture. Moreover, it helps employees understand why decisions are being made and gives them a greater sense of stability; this helps raise commitment and decrease turnover.

Another form of employee investment is increased training, both technical and sales related. In fact, an industry expert observed that the most successful firms actually increased training during the down times. These firms see down times not as a time to lay off employees, only to later rehire new ones, but rather to invest in employee skills. After thinking for a few moments about what makes for SuA, GAFT president George Ryan told us:

As I look at some of the companies that have survived and were resilient, even in the downtimes, they were willing to

make sure that their people attended conferences, were up to snuff on technology and on the changes and the opportunities that it would present them... A lot of people that were myopic hunkered down and got smaller. A lot of these people are not even around any more.

Adoption of New Technology

Strategic investment in and adoption of new technology was perhaps the most cited characteristic of resilient firms. What was clear from the interviews, however, was that investment in new technology was not enough in and of itself. The process by which this technology is selected, and the manner it is introduced into the organization is just as important. Successful firms do their homework. These firms put a great deal of effort into thinking strategically about how the technology fits with their strategic plan and how to best bring the technology into the firm, making sure they have the organizational supports needed to fully utilize the new technology.

Flexible Customer Focus

Given the changing nature of the printing industry and its increasing commoditizing, identifying and meeting value-added customer demands is a critical component of the successful organization. This dedication in customer commitment has to be built into the underlying culture of the organization. Castiglione described managers who said that they were committed to customers, but then complained when the customer placed too many demands on them. “They have an ‘if you build it they will come’ attitude.”

Interview Findings

Resilient firms are in close contact with customers. Their salespeople and managers listen closely to what their customers want and react quickly to provide it. The most successful firms work actively with customers to help them define their needs and explain how new technologies and capabilities can (or cannot) meet them.

Leadership and Vision

Experts spoke of strong leadership and vision in printers that were surviving through hard economic times. Leaders of successful firms are engaged in the firm, knowledgeable about every part of the firm, and have a strong vision for where the company is going. Ray Prince, a long time technical consultant to the printing industry, stated:

All the [successful firms] have very strong visions. They have identified certain key factors. They have identified what their company truly is. They have identified their market carefully. They have identified who they want their customers to be, and this is an ongoing process.

Ryan emphasized that this vision needs to be communicated throughout the organization:

When I go into companies where that vision isn't really shared, I find that they are just subject to the whims of some very good pressmen. It winds up that these pressmen—if they have been around—they don't embrace the new technology... I see a lot of plants like that actually.

Strong leadership also means an active involvement in the critical decisions of the organization. Interviewees identified resilient firms as ones in which the leadership was actively involved in the investigation of and ultimate decisions regarding new technologies. This meant both knowledge about and interaction with customers, as well as active involvement in the exploration of new technology. For the former, it was felt that only by keeping in touch with changing customer demands can the leader understand the product characteristics needed by the consumer, and the technologies needed to produce these products. For the latter, leadership involvement is

critical because it helps to ensure that the firm is not just purchasing new technology, but is purchasing technologies that make sense given its strategic direction.

INTERVIEW ANALYSIS

The four themes that ran through our interviews corroborate the importance of most of the factors in resilience that we proposed and they provide some specific means in which these factors are manifested. We learned in these interviews that firms survive if they have:

- **Purpose**
Resilient firms have a clear vision and strategy well communicated to employees and clients. A flexible customer focus, maintained through constant client attention, ensures that the firm continues to serve its function. Resilient firms build a sense of purpose in employees and other stakeholders through communication and actions that signal commitment.
- **Cognitive capabilities**
Investment in training and education can help build both professional motivation and new capabilities to help the firm adjust to changing times. When firms invest in technology, they also invest in the capabilities needed to utilize it fully. Leaders of resilient firms are particularly involved in technology decisions and client care, meaning they have sufficient understanding that they can intelligently adjust course as necessary.
- **Slack resources**
Resilient firms use slack resources to invest in employee skills during down times; these skills become a resource to allow the firm to take advantage of opportunities as they arise.
- **Organic structure and culture**
Organizational flexibility can be developed through investment in technology and investment in understanding technology. By continuously explor-

ing and investing in new technologies and investment in training and education, resilient organizations are able to prepare themselves for a variety of competitive scenarios and position themselves to be opportunistic in the face of change.

- **Psychological Containment**

An employee's chief anxiety during hard economic times is concern over

the future of the firm and their future with it (i.e., "Will I have a job here?"). Providing training during a downturn is a very strong signal that yes, you will, that the firm has invested in you. So aside from gain in competencies, it alleviates anxiety and allows the employee to do his/her job rather than think about getting a new one.

Conclusions and Continued Research

CONCLUSIONS

Results from both our survey and interviews show:

- Good support for some aspects of theory: purpose and cognitive capabilities correlate with success under adverse conditions. Profitability correlated highly with:
 - employee participation in ownership, profit-sharing, or performance bonus plans
 - the percentage of payroll devoted to training and education.
- A better understanding of organizational purpose—the importance of having a vision and charting a course.
- A nuanced understanding about what cognitive capabilities are relevant:
 - training, especially for management and administrators, correlate strongly with profitability
 - quantity of technologies adopted and ancillary services provided correlate negatively with profitability
 - active managerial understanding of changing client needs and technology, gained through interaction with customers and technology exploration contributes to resilience.
- Contingent support for other aspects of theory:
 - support for the notion of psychological containment and two ways it can be manifested under economic adversity (continued education/training and base salaries)
 - suggestion of the importance of particular aspects of slack resources (continued employee and technological investment; skills to adapt) and organic structure and culture (flexibility and willingness to try new approaches).

SURVEY CONSTRUCTS

The most important area of improvement is in developing better constructs. For each important variable, we will try to develop survey questions that can better operationalize the variables of interest.

Outcome Variable (SuA)

We will strive to improve our outcome variable in three ways. First, we will structure the survey so that we have numbers for profitability, rather than a dichotomous variable. Second, we will try to improve that number by combining it with owner compensation; many smaller firms doing well show minimal or no profit because the owner expenses investment or takes the profits in salary and perks. Third, we should use a multi-dimensional construct, in part because accounting profits do not reflect what we really mean by profitability (salary, investment, and perks are left out), but also because there is more to success than profits. It could also mean survival, payroll, growth, or other perfor-

Conclusions and Continued Research

mance measures, objective and subjective. We will explore getting these indicators in our next survey design.

Independent Variables

Likewise, we will strive to develop questions that can serve as indicators for slack

resources, organizational structure and culture, and psychological containment as well as improved indicators for purpose and cognitive capabilities, and any other factors that may help or hinder Success under Adversity.

Endnotes

¹ We had originally used the term, “Success despite Adversity,” but changed it to the slightly broader, “Success under [conditions of] Adversity” because some firms actually use adverse conditions to their advantage, almost achieving success because of, or, at any rate, through adversity.

² For the questions on training and training as a percentage of payroll questions only, an additional 114 responses (45 leaders and 69 laggards) were added from a quarterly survey conducted at about the same time.

³ Technologies surveyed were: High-end PDF workflows, Do it yourself PDF workflows, Larger inkjet or continuous-tone digital proofing, Stochastic (FM) Screening, Direct Imaging to plate on press, Digital printing, Digital asset management, Variable printing, On-line connection/email, Printing management/e-commerce system, and Sales force/estimation automation.

⁴ Ancillary services surveyed were: Desktop Publishing Services, Consulting on Desktop Publishing, Graphics Design Services, Fulfillment/Inventory Management, Warehousing, Computer Training for Clients, System Integration, Photo CD Services, Database Management, Electronic File Storage Management, Digitally Stored Photo Libraries, Electronic Short Run Color Printing, Fax Publishing, Video Services, Multimedia Products, CD-ROM Services, Web Page Production for Clients, and Web Page Sites Hosting for Clients.

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