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The manuscripts contained in this volume have been double blind refereed. The acceptance rate for manuscripts in this issue, 25%, conforms to our editorial policies.

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MANUSCRIPTS

THE BORROWING EXPERIENCE OF BLACK AND HISPANIC-OWNED SMALL FIRMS: EVIDENCE FROM THE 1998 SURVEY OF SMALL BUSINESS FINANCES

Susan Coleman, University of Hartford

ABSTRACT

Commercial bank loans are a primary source of external capital for firms that are too small to access the public debt and equity markets. Thus, the availability of credit at a reasonable cost is a key concern for small firms. This article explores the extent to which black and Hispanic-owned firms are willing to pursue commercial bank loans and the extent to which they are able to obtain them. Results reveal that, although black and Hispanic-owned firms were just as likely to apply for a loan as white-owned firms, they were significantly less likely to be approved for one. Further, black and Hispanic-owned firms were significantly more likely to avoid applying for loans because they believed they would be denied. These findings did not reveal any differences in the interest rates charged on approved loans to black, Hispanic, or white-owned firms.

INTRODUCTION

Small businesses are a vital and growing part of the United States economy. According to the United States Small Business Administration (SBA), small firms having fewer than 500 workers employ 53 percent of the workforce and contribute 47 percent to all sales. They are also responsible for 51 percent of private gross domestic product and account for over 75 percent of new jobs (The facts about small business, 1999). Small firms are also a major source of innovation. According to the SBA (The facts about small business, 1999), small firms produce twice as many product innovations as large firms.

Traditionally, securing sources of capital has been a frequent concern for small and growing firms (Ang, 1991; Ennew & Binks, 1995; Pettit & Singer, 1985; Van Auken & Holman, 1995). Many small firms start with the intention of remaining relatively small. These micro-businesses or "mom-and-pop" operations are typically funded with the firm owner's personal savings, loans or gifts from family and friends, and with earnings from the firm (Petty & Bygrave, 1993). Somewhat larger firms, and particularly growing firms, however, may require capital from external sources. These sources are typically somewhat limited.

Small firms are unable to issue public debt and equity due to their small size and the high relative cost of issuance (Schnabel, 1992; Weinberg, 1994). Small, "entrepreneurial" firms with the prospect of rapid growth may have the option of funding from angels and venture capitalists. These firms represent a relatively small percentage of the total number of small firms, however. For most

small firms, the major source of external financing is debt in the form of commercial bank loans (Ang et al., 1995; Berger & Udell, 1995; Binks & Ennew, 1996; Cole & Wolken, 1996).

Firms owned by minority business owners, and in particular, firms owned by black and Hispanic business owners represent a special subset of small firms that are growing even more rapidly than small firms in general. The number of black-owned firms increased by 108 percent from 1987 to 1997 to a total of 881,646 firms. Simultaneously, their revenues increased by 109 percent for the same time period. Hispanic-owned firms increased even more dramatically, increasing by 232 percent from 1987 to 1997 to a total of 1.4 million firms, while their revenues increased by 417 percent (The facts about small business, 1999).

Previous studies conducted by the SBA have noted that black and Hispanic-owned firms are less likely to use credit and less likely to use bank loans than small firms on average (Minorities in business, 1999). It is unclear as to whether or not these discrepancies are due to lack of access to debt capital, differences in firm characteristics, or, alternatively, different preferences on the part of firm owners. If, in fact, black and Hispanic-owned firms are less able or less willing to secure bank loans, the major source of external financing for small firms, that constraint may affect their ability to grow, to add jobs, to develop innovative products and services, and even to survive. This article will explore the use of debt capital and borrowing behavior on the part of white, black, and Hispanic small firms in order to deepen our understanding of these important topics.

PRIOR RESEARCH

Prior research on differential use of debt capital by race and ethnicity has been largely directed toward an examination of residential mortgage lending. Several important studies were conducted by the Boston Fed and others, at least partially to examine the effectiveness of the Home Mortgage Disclosure Act of 1975 and the Community Reinvestment Act of 1977. The HMDA requires lenders to disclose the geographic distribution of their residential mortgages with the intent of ensuring that minority applicants have equal access to loans. This law was subsequently amended in 1989 in the Financial Institutions Reform, Recovery, and Enforcement Act (FIRREA) to assist in the identification of discriminatory lending practices. The Community Reinvestment Act (CRA) requires lenders to respond to the credit needs in their entire community. One purpose of the CRA was to encourage lenders to extend credit to urban neighborhoods that are more heavily populated by minority homeowners and businesses.

In a study by the Boston Fed, Bradbury et al. (1989) found that the ratio of mortgage loans to housing varied by race and that this pattern could not be explained by economic or other non-racial factors. Neighborhoods with a higher percentage of black residents had a lower ratio of mortgage loans than those with a smaller percentage of black residents. Similarly, Canner (1991) and Canner & Smith (1992) found that the rate of mortgage loan denials increased with the proportion of minority residents in the neighborhood with black and Hispanic applicants being denied more frequently than whites or Asians. Munnell & Tootell (1996) also found evidence of higher denial rates for blacks and Hispanics than for white applicants. Although they found that minority applicants had less wealth and weaker credit histories than white applicants, even adjusting for these differences, blacks were still more likely to be denied. They concluded that lenders have

a considerable amount of discretion in the loan approval process, and that there is evidence of differential treatment by race.

Similar results were found in studies of lending to minority-owned businesses. Ando (1988) found that black business owners were less able to obtain loans from commercial banks even in instances where they had similar levels of financial and human capital. Bates (1989) found that black-owned firms were less likely to borrow than Asian or white-owned firms. He also found that, when they did obtain loans, black-owned firms obtained smaller loans than non-minority firms that were otherwise identical.

Cavalluzzo & Cavalluzzo (1998) conducted a study of small firm borrowing using data from the 1989 National Survey of Small Business Finances. They found no differences in loan application rates across demographic groups, but they did find that black and Hispanic firms experienced higher denial rates even controlling for differences in firm and owner characteristics. Using data from the 1993 National Survey of Small Business Finances, Cohn and Coleman (2001) also found that black business owners were no less likely to apply for loans, but that they were more likely to be denied. Further, they found that black-owned firms paid higher interest rates for the loans that were approved.

DESCRIPTION OF THE DATA

Data for this study were drawn from the 1998 Survey of Small Business Finances (SSBF), formerly called the National Survey of Small Business Finances (NSSBF), conducted jointly by the Federal Reserve and the U.S. Small Business Administration. The SSBF includes a national sample of small firms stratified by geographic region, race, gender, and business type and is the largest and most comprehensive such sample of small firm data available. It includes demographic information on firm owners, balance sheet and income statement data for the firm, information on the use of financial products and services, and information on financial service providers. The SSBF is conducted every five years; the 1998 survey is the most recent.

Tables 1 and 2 describe some of the characteristics of firms included in the 1998 SSBF. Table 1 reveals that the sample included 274 black-owned firms, 260 Hispanic-owned firms, and 3,042 white-owned firms. The white-owned firms were, on average, larger than either the black-owned or the Hispanic-owned firms in terms of sales, total assets, and total employees. Although the values for these three variables were highly skewed, median numbers for sales, assets, and employees demonstrate that the same relative relationship exists. White-owned firms were the largest, followed by Hispanic-owned firms, and finally by black-owned firms which were roughly one-fourth of the size of white-owned firms.

All three types of firms had average and median owner ages in the range of 48 to 51 years. White firm owners had more experience, however, and firms owned by white owners were slightly older. Nevertheless, the owners of all three types of firms had at least 14 years of experience on average, and their firms had been in existence for at least 11 years. Thus, these were not start-up firms with inexperienced owners.

Table 2 reveals some interesting differences between the three types of firms. Although 56.3 percent of the white-owned firms were organized as some type of limited liability entity, only 42

percent of the black-owned firms and 41.5 percent of the Hispanic-owned firms were so organized. Thus, a considerably higher percentage of black and Hispanic owned firms were organized as either sole proprietorships or partnerships with the risk of unlimited liability.

Table 1: Characteristics of Firms Included in the 1998 SSBF

Variable	Black	Hispanic	White
Number of Firms	274	260	3042
Sales			
Mean	778,447	1,076,954	3,792,909
Median	72,733	150,000	281,649
Total Assets			
Mean	178,398	393,672	1,631,795
Median	29,722	49,188	110,000
Total Employees			
Mean	13.15	13.95	27.29
Median	3	3	5
Firm Age			
Mean	11.33	11.47	15.04
Median	9	9	12
Owner Age			
Mean	49.41	48.47	51.12
Median	49.5	48	51
Owner Experience			
Mean	14.95	16.55	19.93
Median	13	15	20

A very high percentage of all three types of firms were family-owned, 84.8 percent of the white-owned firms, 92.3 percent of the black-owned firms, and 94.2 percent of the Hispanic-owned firms. Although a higher percentage of white firm owners had attended college, over 50 percent of the firm owners for all three types of firms had done so. A higher percentage of black and Hispanic-owned firms were located in urban areas or MSAs.

A higher percentage of black- and Hispanic-owned firms were in service lines of business. In fact, over 50 percent of black-owned firms were in service businesses compared to 40.1 percent of white-owned firms. This distinction could conceivably serve as a factor in credit granting decisions since service firms may be less likely to have assets that could be used as collateral. Correspondingly, black and Hispanic-owned firms were less likely to be in manufacturing or construction, both of which do typically have assets that could be used as collateral.

Table 2: Characteristics of Firms Included in the 1998 SSBF			
Variable	Black	Hispanic	White
Number of Firms	274	260	3042
Org	42.0	41.5	56.3
Family	92.3	94.2	84.8
Ed	51.5	54.6	56.2
MSA	86.5	91.5	76.7
Serv	52.6	46.9	40.1
Manuf	4.4	8.8	11.8
Transp	4.4	4.6	4.1
Retail	24.1	25.8	26.5
Ins/RE	5.5	6.9	6.1
Construc	8.8	6.2	10.7
Mining	0.0	0.4	0.5

One of the most interesting distinctions between white-owned firms and black and Hispanic-owned firms is their credit rating and prior bad credit experience. As shown in Table 3, over 40 percent of black-owned firms were rated by Dun & Bradstreet as having either "significant risk" or "high risk". Similarly, 37 percent of Hispanic-owned firms were rated as having either significant or high risk. Only 28 percent of white-owned firms, however, were rated as having significant or high risk.

Table 3: Dun & Bradstreet Credit Scores			
Category	Black	Hispanic	White
Low risk	0.7	4.2	7.8
Moderate risk	18.2	23.8	27.8
Average risk	40.9	34.6	36.0
Significant risk	29.6	25.4	20.6
High risk	10.6	11.9	7.8

Similarly, Table 4 reveals that a much higher percentage of black-owned firms had some prior experience with a personal delinquency (28.8% vs. 10.4%), a business delinquency (21.9% vs 14.1%), or a judgment against the firm or the firm owner (10.2% vs 3.4%) than white-owned firms. Hispanic-owned firms also had a higher level of prior bad credit experience than whites, particularly in the areas of personal (15.8% vs. 10.4%) and business delinquencies (19.2% vs. 14.1%). The higher incidence of credit difficulties for black and Hispanic-owned firms may contribute to a

perception of poor credit quality for black and Hispanic-owned firms in general, including those firms that do not suffer from higher risk or prior credit difficulties.

Table 4: Prior "Bad Credit" Experience			
Variable	Black	Hispanic	White
Number of Firms	274	260	3042
Bankruptcy	5.8	5.4	2.2
Personal Delinquency	28.8	15.8	10.4
Business Delinquency	21.9	19.2	14.1
Judgment Against	10.2	5.4	3.4

USE OF FINANCIAL SERVICE PROVIDERS AND CREDIT PRODUCTS

When asked for the most important problem facing their business (Table 5), both black and Hispanic-owned firms cited "financing and interest rates" as either their first or second choice. Alternatively, white-owned firms did not include financing and interest rates as one of their top three choices. This suggests that, at least in the mind of black and Hispanic business owners, credit availability and cost are an issue.

Table 5: What is the most important problem facing the business?	
White:	
1.	Quality of labor
2.	Competition
3.	Other
Black:	
1.	Financing and interest rates
2.	Quality of labor
3.	Competition
Hispanic:	
1.	Quality of labor
2.	Financing and interest rates
3.	Poor sales

All three types of firms cited commercial banks as their major source for financial services. For black-owned firms, 84.7 percent of firms used commercial banks as their primary source of financial services compared to 81.5 percent of Hispanic-owned firms and 88.3 percent of white-owned firms. All three types of firms gave location and the existence of a relationship with the bank as major reasons for selecting their primary financial services provider. This reveals the need for convenience and accessibility, but it also reveals the importance of the relational aspects of the banking experience. None of the firm types indicated that interest rates, prices, or fees were a major reason for selecting the primary financial service provider.

The SSBF includes loan data for six different types of loans; lines of credit, financial leases, commercial mortgages, vehicle loans, equipment loans, and "other" loans. As indicated in Table 6, lines of credit were the major credit product used by black, Hispanic, and white-owned small firms. Black and Hispanic-owned firms were considerably less likely to have a line of credit than white-owned firms were, however. Although 37.8 percent of the white-owned firms had a line of credit, only 22.6 percent of the black-owned firms and 26.2 percent of the Hispanic-owned firms had a line of credit. This is an important distinction since a line of credit is a relatively flexible type of loan that can be used for a variety of business purposes. An inability or unwillingness to obtain lines of credit may reduce the firm's financial flexibility and its ability to maneuver in a variety of different business circumstances. Vehicle loans were the second most commonly used loan product by all three types of firms. Roughly 20 percent had some type of vehicle loan. Fewer than 20 percent of the firms used any of the other four loan types.

Table 6: Percentage of Loans by Category

Loan Type	Black	Hispanic	White
Line of Credit	22.6	26.2	37.8
Lease	15.7	10.0	14.7
Comm. Mortgage	13.1	14.2	16.5
Vehicle	19.0	20.0	23.1
Equipment	7.7	11.5	14.5
Other	10.9	9.6	12.7

RECENT BORROWING EXPERIENCE

The SSBF includes information on each firm's borrowing experience for loans obtained within the previous three years. Table 7 reveals that the recent loan application experience of black, Hispanic, and white-owned firms was relatively similar. For black-owned firms, 28.8 percent of the firms had applied for a loan within the previous three years compared to 28.5 percent of the Hispanic firms and 27.1 percent of the white-owned firms. Approval rates differed dramatically, however. Whereas 77.8 percent of the white-owned firms had their loan applications approved, only 43

percent of the black-owned firms and 54.1 percent of the Hispanic-owned firms were approved. White-owned firms were more likely to provide collateral and guarantees, but black and Hispanic-owned firms paid a higher interest rate. It is also noteworthy that over 50 percent of the black-owned firms did not even bother to apply for a loan because they believed they would be turned down. This compares to 33.5 percent for Hispanic-owned firms and only 19.7 percent for white-owned firms. Thus, although an equal percentage of black, Hispanic, and white-owned firms applied for loans, a higher percentage of blacks and Hispanics were turned down, and a higher percentage of blacks and Hispanics avoided applying because they assumed they would be turned down. In terms of loan type, lines of credit were the most frequently applied for type of loan (Table 8). For black-owned firms, over 50 percent of the most recent loan applications were for lines of credit compared to 38.6 percent for Hispanic-owned firms and 30 percent for white-owned firms.

Table 7: Recent Loan Application Experience

Variable	White	Black	Hispanic
MRLapp	27.1	28.8	28.5
MRLget	77.8	43.0	54.1
MRLcomp	11.3	4.3	11.8
MRLguar	56.2	56.1	50.0
MRLcoll	64.4	48.8	50.0
MRLpoints	0.193	0.341	0.216
MRLrate	8.924	10.495	9.506
Noapply	19.7	51.5	33.5

Table 8: Most Recent Loan Type

Loan Type	Black	Hispanic	White
Line of Credit	56.1	38.6	30.0
Lease	4.9	6.8	5.4
Comm.Mortgage	0.0	9.1	12.4
Vehicle	9.8	25.0	17.5
Equipment	12.2	18.2	20.4
Other	17.1	2.3	14.3

LOAN APPLICATIONS AND APPROVALS

One of the key questions posed by this research is whether or not black and Hispanic-owned small firms are as likely to apply for loans as white-owned firms, and, if they apply, if they are as likely to be approved for loans. Univariate analysis, described above, suggests that although roughly the same percentage of minority-owned firms apply for loans as white firms, a lower percentage of them are approved. Similarly, a higher percentage of black and Hispanic-owned firms avoid applying at all, because they assume they will be denied. The shortcoming of univariate analysis, however, is that it does not take into consideration the possible effect of several factors working in concert. This problem is corrected by multivariate analysis. In this instance, logistic regression analysis was used to relate dependent variables representing loan application, loan approval, and application avoidance to a series of explanatory variables representing characteristics of the firm and the firm owner. Logistic regression is appropriate in instances where the dependent variable is dichotomous rather than continuous (Aldrich & Nelson, 1984; Cramer, 1991; Demaris, 1992; Tansey et al., 1996). The model took the following form:

$$MRLapp\ (also\ MRLget\ and\ Noapply) = a + b_1\ black + b_2\ hispan + b_3\ ownage + b_4\ ed + b_5\ logsales + b_6\ ROE + b_7\ firmage + b_8\ org + b_9\ highrisk + b_{10}\ badcred + b_{11}\ serv + b_{12}\ manuf + b_{13}\ transp + b_{14}\ retail + b_{15}\ insre + b_{16}\ construc + e$$

MRLapp is a dichotomous variable indicating whether or not the firm applied for a loan within the previous three years. This model was also tested with two additional dependent variables. MRLget indicates whether or not the firm received a loan within the previous three years, and Noapply represents firms that did not apply for a loan because they feared they would be denied. The independent variables included in the model are defined in Appendix 1. A correlation analysis revealed that the independent variables were not highly correlated with each other or with the dependent variables.

The independent variables selected represent characteristics of the firm owner as well as characteristics of the firm. The owner's personal characteristics may determine his or her willingness or ability to secure debt financing. Similarly, the firm's characteristics may make it more or less attractive to a lending institution. Owner characteristics include minority status (black or Hispanic), age, and educational level. As discussed in the section on prior research, there is some evidence that black and Hispanic borrowers are less likely to receive bank loans than white borrowers (Ando, 1988; Bates, 1989; Bradbury et al., 1989; Canner, 1991; Canner & Smith, 1992; Cavalluzzo & Cavalluzzo, 1998; Cohn & Coleman, 2001; Munnell & Tootell, 1996). This could be because black and Hispanic individuals are less willing to seek debt from external sources, or it could be because they are more likely to be denied for either economic or non-economic reasons. Although non-economic discrimination is not in the interests of the lender since it raises the cost of doing business (Becker, 1957), prior research provides some evidence that it does, nevertheless, occur.

Owner age was included as a variable because prior research indicates that older individuals are more risk averse than younger ones (Cohn et al., 1975; Morin & Suarez, 1983). Since adding debt to the capital structure increases the riskiness of the firm, older and more risk averse owners may wish to avoid it. Educational level (Ed) is a measure of human capital (Coleman & Cohn, 2000). Lenders, most of whom are college-educated, may view firm owners who have attended college more favorably. They may equate a college education with a higher level of persistence, self-discipline, and training, all qualities that would be beneficial to the running of a business.

Firm characteristics include variables representing firm size, profitability, firm age, organizational status, riskiness, credit history, and industry classification. Prior research reveals that larger firms are more likely to receive loans than smaller ones (Cole & Wolken, 1995). Similarly, it stands to reason that more profitable firms should be more attractive to lending institutions. Younger firms are more likely to be going through a growth phase and may require external sources of capital (Coleman & Cohn, 2000). Further, one would anticipate that corporations and limited liability partnerships would be more willing to take on debt, because they have the benefit of limited liability protection (Ang, 1991). Finally, some researchers have found a relationship between industry classification and access to debt capital. They contend that firms in non-asset intensive industries are less able to provide collateral for loans (Riding et al., 1994; Scherr et al., 1993).

Results of the logistic regression analyses are included in Tables 9 through 11. Table 9 includes the results of loan application model (MRLapp) and reveals that black small business owners were significantly more likely to have applied for a loan within the previous three years. The variable representing Hispanic business owners was not significant. This finding suggests that black and Hispanic business owners were not more risk averse than business owners in general, nor were they more likely to rely on capital from other sources. They were just as likely, and in the case of black business owners, more likely, to have applied for a loan within the previous three years.

Table 9 also reveals that larger firms (Logsales) and younger firms (Firmage) were more likely to have applied for a loan as anticipated. Further, younger firm owners (Ownage) were more likely to have applied for a loan, possibly suggesting a greater orientation toward firm growth or a lesser degree of risk aversion. Finally, firms with a history of credit difficulties (Badcred) were significantly more likely to have applied for a loan. Intuitively this makes sense, since firms that have used credit in the past are more likely to be those that would seek it in the present.

Results for the model for loan approvals (MRLget) are included in Table 10. Although Table 9 indicated that black and Hispanic-owned firms were no less likely to apply for loans, Table 10 reveals that they were significantly less likely to have been approved for them; the variables Black and Hispanic were both significant and negative. Table 10 also reveals that larger firms (Logsales) and older firms (Firmage) were more likely to be approved for loans, possibly because they are more stable and firmly established. Finally, although Table 9 indicated that firms with a history of bad credit were more likely to have applied for loans, Table 10 indicates that they were less likely to be approved for them.

The results of the application avoidance model are included in Table 11. Controlling for other variables, black and Hispanic business owners were still significantly more likely to have avoided applying for a loan within the previous three years because they feared being turned down. This rather disturbing finding suggests that some black and Hispanic firms did not pursue sources

of external debt capital that might have allowed them to finance working capital, purchase equipment, grow their firms, or offer new products and services. Conversely, we might assume that they sought capital from other, more informal, sources or alternatively, that they kept their firms relatively small because they lacked capital for expansion. As indicated in Table 1, black-owned firms were dramatically smaller than firms owned by white small business owners.

Table 9: Results of Logistic Regression Analysis
Dependent Variable: MRLapp

Variable	Parameter Estimate	Wald Chi-square	Pr>Chi-square
Intercept**	-2.7966	17.9744	0.0001
Black*	0.3914	4.6006	0.0320
Hispan	0.3210	3.3522	0.0671
Ownage**	-0.0231	21.5164	0.0001
Ed	-0.0305	0.0986	0.7535
Logsales**	0.3097	123.2031	0.0001
ROE	-0.0056	1.6766	0.1954
Firmage**	-0.0190	15.5057	0.0001
Org	-0.1041	0.7806	0.3770
Highrisk	0.1400	1.7718	0.1832
Badcred**	0.5250	20.5979	0.0001
Serv	-0.9685	3.3001	0.0693
Manuf	-0.8179	2.2701	0.1319
Transp	-0.6260	1.1973	0.2739
Retail*	-1.1657	4.7463	0.0294
InsRE	-1.0187	3.2231	0.0726
Construc	-0.8581	2.4604	0.1167

*results significant at the .05 level
**results significant at the .01 level

Table 10: Results of Logistic Regression Analysis
Dependent Variable: MRLget

Variable	Parameter Estimate	Wald Chi-square	Pr>Chi-square
Intercept	-0.8738	0.3080	0.5789
Black**	-1.2875	15.3118	0.0001
Hispan*	-0.7696	5.7100	0.0169
Ownage	-0.0000	0.0000	0.9975
Ed	-0.2345	1.1425	0.2851
Logsales**	0.2414	15.3739	0.0001
ROE	0.0008	0.0069	0.9340
Firmage**	0.0416	7.7288	0.0054
Org	0.2457	0.9500	0.3297
Highrisk	-0.3674	2.8190	0.0932
Badcred**	-1.3619	38.0807	0.0001
Serv	-0.9452	0.5646	0.4524
Manuf	-1.0478	0.6743	0.4116
Transp	0.6187	0.1927	0.6607
Retail	-0.7771	0.3786	0.5384
InsRE	0.1399	0.0099	0.9206
Construc	-0.9846	0.5901	0.4424

*results significant at the .05 level
**results significant at the .01 level

Table 11: Results of Logistic Regression Analysis
Dependent Variable: Noapply

Variable	Parameter Estimate	Wald Chi-square	Pr>Chi-square
Intercept	0.3198	0.1115	0.7385
Black**	1.3394	60.9583	0.0001
Hispan**	0.6040	11.0752	0.0009
Ownage*	-0.0138	5.6852	0.0171
Ed	-0.0407	0.1283	0.7202
Logsales**	-0.1659	30.3331	0.0001
ROE	-0.0043	0.7585	0.3838
Firmage**	-0.0227	11.6113	0.0007
Org	0.0183	0.0190	0.8904
Highrisk**	0.4505	14.5669	0.0001
Badcred**	1.5472	164.9887	0.0001
Serv	0.4087	0.2334	0.6290
Manuf	0.6386	0.5529	0.4571
Transp	0.6838	0.5910	0.4420
Retail	0.5397	0.4042	0.5250
InsRE	0.2265	0.5370	0.7966
Construc	0.6302	0.5370	0.4637

*results significant at the .05 level
**results significant at the .01 level

Table 11 also indicates that the owners of smaller firms (Logsales) and younger firms (Firmage) were less likely to apply for loans because they feared denial. It is possible that the owners of these firms knew or assumed that they would not meet a lender's criteria and therefore chose not to apply. Similarly, firms that were rated as having significant or high risk by Dun & Bradstreet or firms that had a history of bad credit were less likely to apply for a loan because they feared denial. Again, the owners of these firms may have assumed that their track records would not make them good lending candidates.

One question concerning bank loans to black and Hispanic firm owners is availability, a second is cost. The findings discussed above suggest that external debt may be less accessible to black and Hispanic small business owners. Do those small firm owners also pay a higher price for credit when they are approved for a loan? To explore this issue, a regression model was developed using the interest rate on the most recent loan (MRLrate) as the dependent variable and the previously included independent variables. This model took the following form:

$$MRLrate = a + b_1 black + b_2 hispan + b_3 ownage + b_4 ed + b_5 logsales + b_6 ROE + b_7 firmage + b_8 org + b_9 highrisk + b_{10} badcred + b_{11} serv + b_{12} manuf + b_{13} transp + b_{14} retail + b_{15} insre + b_{16} construc + e$$

A second logistic regression model was developed to test the relationship between the interest rate on the most recent loan and characteristics of the loan itself such as compensating balances, collateral, guarantees, points, and whether it was fixed or variable. One would anticipate that a willingness to provide compensating balances, collateral, or guarantees would lower the cost of borrowing. Similarly, one would anticipate that points would serve to lower the interest rate. Further, with variable rate loans some of the interest rate risk is borne by the borrower. Thus, one might expect a lower interest rate on variable rate loans. This model took the following form:

$$MRLrate = a + b_1 black + b_2 hispan + b_3 logsales + b_4 MRLcomp + b_5 MRLcoll + b_6 MRLguar + b_7 MRLpoint + MRLfixed + e$$

The variables for this second model are also defined in Appendix 1.

Results of the first interest rate regression model are included in Table 12. The only significant variable in this model was the variable representing firm size which had a negative sign. Thus, smaller firms paid a higher interest rate on loans, a finding that is consistent with prior research (Petersen & Rajan, 1994). In this model, black and Hispanic-owned firms did not pay significantly higher interest rates than small firms in general.

Results for the second interest rate model are included in Table 13. They also demonstrate that smaller firms paid a higher interest rate on their most recent loan. In addition, firms that provided collateral paid a lower rate, possibly because the use of collateral reduces risk to the lender. As in the case of the first interest rate model, black and Hispanic-owned firms did not pay significantly higher interest rates for their most recent loan.

Table 12: Regression Model #1
Dependent Variable: MRLrate

F Value: 4.637			
Prob>F: 0.0001			
R: square: 0.1266			
Variable	Parameter Estimate	t value	Prob>t
Intercept	12.5918	10.705	0.0001
Black	0.7104	1.599	0.1105
Hispan	0.4542	1.178	0.2395
Ownage	-0.0111	-1.066	0.2871
Ed	0.1957	0.999	0.3181
Logsales**	-0.2881	-5.122	0.0001
ROE	-0.0011	-0.112	0.9112
Firmage	-0.0169	-1.722	0.0858
Org	0.1448	0.582	0.5610
Highrisk	0.0630	0.303	0.7618
Badcred	0.3279	1.379	0.1684
Serv	0.7576	0.923	0.3562
Manuf	0.7169	0.859	0.3908
Transp	0.6384	0.719	0.4722
Retail	0.7098	0.863	0.3883
InsRe	0.7504	0.837	0.4029
Construc	0.7460	0.879	0.3796
**results significant at the .01 level			

Table 13: Regression Model #2
Dependent Variable: MRLrate

F Value: 9.321			
Prob>F: 0.0001			
R: square: 0.0965			
Variable	Parameter Estimate	t value	Prob>t
Intercept**	12.8542	21.430	0.0001
Black	0.5468	1.420	0.1561
Hispan	0.3719	1.042	0.2980
Logsales**	-0.2788	-6.763	0.0001
MRLcomp	0.7024	1.400	0.1619
MRLcoll*	-0.4040	-2.293	0.0221.
MRLguar	0.1958	1.159	0.2469
MRLpoint	-0.1106	-0.297	0.7668
MRLfixed	0.0015	0.008	0.9933

*results significant at the .05 level
**results significant at the .01 level

DISCUSSION

This research seeks to address three important questions concerning borrowing by black and Hispanic-owned small firms. First, is there a demand for commercial loans on the part of black and Hispanic-owned firms? As noted earlier, many small firms are funded primarily by internally generated funds and by the personal financial resources of the firm owner. These "mom and pop" or "lifestyle" firms may not seek or require external sources of capital and may, in fact, prefer to operate with a minimal amount of debt. Alternatively, black and Hispanic-owned firms may prefer not to use formal sources of external capital such as commercial banks. Rather, they may prefer more informal sources such as loans from family members or friends. If this is the case, they may exhibit less demand for commercial loans than other types of firms.

The results of this research using data from the Federal Reserve's 1998 Survey of Small Business Finances reveal, however, that black and Hispanic-owned small firms have comparable or even greater demand for commercial loans than small firms owned by white business owners. Hispanic-owned firms were no less likely to have applied for a loan within the previous three years than white-owned firms, and black-owned firms were significantly more likely to have applied for a loan. This finding suggests that there is no less demand for external sources of debt capital on the part of black and Hispanic-owned firms.

A second questions posed by this research is whether or not black and Hispanic-owned firms are as likely to be approved for loans. There are a number possible reasons for loan denial. It could be that the firm is too small, too new, or lacks assets that could be used as collateral. Similarly, the firm could be in what is viewed as an overly risky industry or line of business. A poor credit history on the part of the firm or the firm owner may serve as further deterrents to lending. These are all justifiable economic reasons to discriminate between firms applying for a loan. Non-economic discrimination occurs, however, when firms are denied credit for reasons including race, ethnicity, gender, age, religious preference, sexual orientation, or handicapped status. Non-economic discrimination is illegal in the United States and, within the context of the financial services industry, is specifically discouraged by laws such as the Home Mortgage Disclosure Act of 1975, the Community Reinvestment Act of 1977, and the Financial Institutions Reform, Recovery, and Enforcement Act of 1989.

The results of this research reveal that we cannot reject the possibility of non-economic discrimination in lending. Although black and Hispanic-owned firms were just as likely to apply for a loan within the previous three years as white-owned firms, they were significantly less likely to be approved for credit. This finding held true even controlling for other variables including firm size, firm age, profitability, organizational status, educational level of the owner, credit history, and industry classification. Even more disturbing, these results reveal that black and Hispanic-owned firms were less likely to apply for credit at all because they assumed they would be denied. As noted earlier in this article, bank loans are the dominant source of external debt capital for small firms. If bank loans are less available to certain groups, or if there is the perception that credit is less available, it will constrain the ability of those firms to grow, to develop new products and services, and to employ workers. Since many black and Hispanic-owned firms are located in urban areas, this is a particular threat to the economic well-being and development of cities, many of which are in desperate need of resident businesses, employment and other sources of economic vitality.

A third questions raised by this research is whether or not black and Hispanic-owned firms pay a higher price for credit when it is available. If credit is more costly for minority-owned firms, it may discourage them from borrowing or reduce their profits and cash flow when they do borrow. These findings do not reveal differences in the interest rates charge on the most recent loans between black, Hispanic, and white-owned firms. They do indicate that smaller firms pay a higher rate for loans, consistent with prior research. Further, they reveal that firms that are willing or able to provide collateral pay a lower rate of interest.

Although Becker (1957) points out that it is not in the interest of firms to discriminate for non-economic reasons because discrimination raises the cost of doing business, the results of this study do not allow us to dismiss the possibility of non-economic discrimination in commercial lending. This finding is consistent with prior research on both mortgage lending and commercial bank lending. A possible shortcoming of this research is that it may have failed to identify significant independent variables that would provide an economic basis for discrimination between black, Hispanic, and white-owned small firms. Further, the SSBF does not provide much in the way of attitudinal data for either lenders or borrowers. Thus, it is difficult to identify attitudinal variables that might cause lenders to shy away from certain types of firms or certain types of borrowers. These weaknesses provide opportunities for further inquiry into this important area of research.

Based on the results reported here, however, we can conclude that the borrowing experience of black and Hispanic-owned firms differs from that of white-owned firms in important ways. This finding provides opportunities for further study.

REFERENCES

Aldrich, J. & F. Nelson (1984). *Linear probability, logit, and probit models*. Beverly Hills, CA: Sage Publications.

Ando, F. (1988). Capital issues and the minority-owned business. *The Review of Black Political Economy* (Spring), 77-109.

Ang, J. S. (1991). Small business uniqueness and the theory of financial management. *The Journal of Small Business Finance* 1 (1), 1-13.

Ang, J. S., J. W. Lin, & F. Tyler (1995). Evidence on the lack of separation between business and personal risks among small businesses. *The Journal of Small Business Finance* 4 (2/3), 197-210.

Bates, T. (1989). The changing nature of minority business: A comparative analysis of Asian, non-minority, and black-owned businesses. *The Review of Black Political Economy* (Fall), 25-42.

Becker, G. S. (1957). *The economics of discrimination*. Chicago: The University of Chicago Press.

Berger, A. N. & G. F. Udell (1995). Relationship lending and lines of credit in small firm finance. *Journal of Business* 68 (3), 351-381.

Binks, M. R. & C. T. Ennew (1996). Growing firms and credit constraint. *Small Business Economics* 8, 17-25.

Bradbury, K. L., K. E. Case, & C. R. Dunham (1989). Geographic patterns of mortgage lending in Boston, 1982-1987. *New England Economic Review* (September/October), 3-30.

Canner, G. B. (1991). Home mortgage disclosure act: Expanded data on residential lending. *Federal Reserve Bulletin* (November), 859-881.

Canner, G. B. & D. S. Smith (1992). Expanded HMDA data on residential lending: One year later. *Federal Reserve Bulletin* (November), 801-824.

Cavalluzzo, K. S. & L. C. Cavalluzzo (1998). Market structure and discrimination: The case of small business. *Journal of Money, Credit, and Banking* 30 (4), 771-792.

Cohn, R. A., W. G. Lewellen, R. C. Lease, & G. G. Schlarbaum (1975). Individual investor risk aversion and investment portfolio composition. *The Journal of Finance* 30 (2), 605-620.

Cohn, R. & S. Coleman (2001). Borrowing behavior of small black-owned firms. *Journal of Applied Management and Entrepreneurship* 6 (2), 68-81.

Cole, R. A. & J. D. Wolken, (1995, July). Financial services used by small businesses: Evidence from the 1993 National Survey of Small Business Finances. *Federal Reserve Bulletin*, 629-667.

Cole, R. A. & J. D. Wolken (1996). Bank and nonbank competition for small business credit: Evidence from the 1987 and 1993 National Surveys of Small Business Finances. *Federal Reserve Bulletin* (November), 983-995.

Coleman, S. & R. Cohn (2000). Small firms' use of financial leverage: Evidence from the 1993 National Survey of Small Business Finances. *Journal of Business & Entrepreneurship* 12 (3), 81-98.

Cramer, J.S. (1991). *The logit model*. London: Edward Arnold.

Demaris, A. (1992). *Logit modeling: Practical applications*. Newbury Park, California: Sage Publications.

Ennew, C. T. & M. Binks (1995). The provision of finance to small businesses: Does the banking relationship constrain performance. *The Journal of Small Business Finance* 4 (1), 57-73.

The facts about small business 1999. Washington, D.C.: U.S. Small Business Administration.

Minorities in business (1999). Washington, D.C.: U.S. Small Business Administration.

Morin, R. A. & A. F. Suarez (1983). Risk aversion revisited. *The Journal of Finance* 38 (4), 1201-1206.

Munnell, A. H. & G. Tootell (1996). Mortgage lending in Boston: Interpreting HMDA data. *American Economic Review* 86 (1), 25-54.

Petersen, M. A. & R. G. Rajan (1994). The benefits of lending relationships: Evidence from small business data. *The Journal of Finance* 49 (1), 3-38.

Pettit, R. R. & R. F. Singer (1985). Small business finance: A research agenda. *Financial Management* (Autumn), 47-60.

Petty, J. W. & W. D. Bygrave (1993). What does finance have to say to the entrepreneur? *The Journal of Small Business Finance* 2 (2), 125-137.

Riding, A., G. H. Haines, & R. Thomas (1994, Summer). The Canadian small business-bank interface: A recursive model. *Entrepreneurship Theory and Practice*, 5-24.

Scherr, F. C., T. F. Sugrue, & J. B. Ward (1993). Financing the small firm start-up: Determinants of debt use. *The Journal of Small Business Finance* 3 (1), 17-36.

Schnabel, J. A. (1992). Small business capital structure choice. *The Journal of Small Business Finance* 2 (1), 13-21.

Tansey, R., M. White, R. G. Long, & M. Smith (1996). A comparison of loglinear modeling and logistic regression in management research. *Journal of Management* 22 (2), 339-358.

Van Auken, H. E. & T. Holman (1995). Financial strategies of small, public firms: A comparative analysis with small, private firms and large, public firms. *Entrepreneurship: Theory & Practice* (Fall), 29-41.

Weinberg, J. A. (1994). Firm size, finance, and investment. *Federal Reserve Bank of Richmond Economic Quarterly* 80 (1), 19-40.

Appendix 1: Definition of Variables Used in Logistic Regression and Regression Models

MRLapp:	coded as 1 if the firm had applied for a loan within the last 3 years
MRLget:	coded as 1 if the most recent loan application was approved
Noapply:	coded as one if the business owner did not apply for a loan within the last 3 years because she/he feared denial
Black:	coded as a 1 if the firm was at least 50 percent owned by a black business owner
Hispan:	coded as a 1 if the firm was at least 50 percent owned by a Hispanic business owner
Ownage:	age of the firm owner in years
Ed:	coded as 1 if the owner had attended college
Logsales:	the log of 1998 sales
ROE:	return on equity or net income divided by equity (Firms having negative equity were deleted from the sample. Also the ROE for firms having a negative ROE was set at 0, and the ROE for firms having an ROE in excess of 100 was set at 100 to eliminate extreme values).
Firmage:	age of the firm in years
Org:	coded as 1 if the firm was a limited liability corporation or partnership, or if it was an s-corporation or a c-corporation
Highrisk:	coded as 1 if the firm's D&B credit score was significant risk or high risk
Badcred:	coded as 1 if: a) the firm or its principal owner had declared bankruptcy within the last 7 years, or b) the principal owner had been delinquent on personal obligations within the past 3 years, or c) the firm had been delinquent on business obligations within the past 3 years, or d) judgements had been rendered against the owner within the past 3 years
Serv:	coded as 1 if the firm was in a service industry
Manufacturing:	coded as 1 if the firm was a manufacturer
Transp:	coded as 1 if the firm was in transportation
Retail:	coded as 1 if the firm was in retail or wholesale trade
Ins/RE:	coded as 1 if the firm was in insurance or real estate
Construc:	coded as 1 if the firm was in construction
Mining:	coded as 1 if the firm was in mining (Eliminated from the logistic regression model to serve as a reference).
MRLcomp:	dichotomous variable coded as a 1 if the firm provided a compensating balance for its most recent loan
MRLcoll:	dichotomous variable coded as a 1 if the firm provided collateral on its most recent loan
MRLguar:	dichotomous variable coded as a 1 if the firm owner provided a guarantee or co-signer for the most recent loan
MRLpoint:	continuous variable indicating the number of points paid for the most recent loan
MRLfixed:	dichotomous variable coded as a 1 if the most recent loan carried a fixed rate of interest

EASE OF ENTRY: A STEP BEYOND ENTRY BARRIERS

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ABSTRACT

The concept of entry barriers has been passed from discipline to discipline -- from Industrial Organization Economics to Strategic Management to Entrepreneurship. Recent attempts to examine the impact that entry barriers have on new venture performance (i.e., Yip, 1982, and McDougall, 1987), have found that the direct impact of entry barriers on new venture performance is difficult to gauge when entry barriers are measured in traditional ways. This paper suggests that the traditional view of entry barriers is incomplete and proposes a new construct, called "ease of entry,"[1] which includes, but is not limited to entry barriers.

INTRODUCTION

Bain (1956) introduced the concept of "entry barriers" to the literature of industrial organization economics (IO). Hofer (1975) brought the concept of entry barriers to the field of strategic management. Porter (1980) expanded the concept, breaking entry barriers down into two classes: entry barriers created as a result of the structural characteristics of the industry ("structural entry barriers") and entry barriers created as a result of the threat of retaliation by incumbents ("retaliation entry barriers").

Yip (1982) expanded the understanding of entry barriers by applying the strategy paradigm to prior IO theories of entry and entry barriers. Yip expanded entry barrier theory to include entry through acquisition, rather than limiting entry to new legal entities, as had previously been done in IO theory. Yip also introduced the term "entry gateways" to represent situations in which an entrant may not face barriers to entry but, instead, may actually be in an advantageous position vis-a-vis incumbents in the industry.

McDougall (1987) attempted to measure the impact that entry barriers have on new venture performance. In testing this relationship, McDougall operationalized "entry barriers" as a composite of five variables. Accepting IO theory, McDougall included as the five most significant sub-variables of entry barriers:

1. economies of scale (using minimum efficient plant size as a surrogate for economies of scale)
2. product differentiation (using advertising-to-sales ratio as a surrogate for product differentiation)
3. industry concentration, (using the four-firm concentration ratio)
4. capital intensity, (using the assets/value-added ratio as a surrogate for capital intensity)
5. rate of growth of total market demand in the industry.

McDougall (1987) calculated a composite height of entry barriers score for each of nine four-digit Standard Industrial (SIC) codes, then compared this composite height of entry barriers score with the performance of the firms in that SIC code. McDougall found some support for the proposition that entry barriers affect profitability of firms within industries, but no support for the proposition that entry barriers affect market share or market share growth, measures of operational performance.

McDougall's (1987) five sub-variables are based on those which IO theorists have most often suggested as the most important sub-variables in entry barriers. This paper makes three suggestions:

1. One of the five sub-variables which IO theory suggests as making up entry barriers (industry concentration) should not be included in entry barriers at all because it influences entry both positively and negatively.
2. There is a set of sub-variables called "entry gateways" which should be included along with entry barriers in the analysis of entry.
3. The inclusion of entry gateways along with entry barriers in the analysis of entry into industries suggests a new construct, called "ease of entry."

EXCLUSION OF INDUSTRY CONCENTRATION FROM ENTRY BARRIERS

IO researchers have consistently hypothesized that "industry concentration" is an entry barrier. McDougall (1987) included concentration ratio in the calculation of entry barriers, thereby implicitly accepting the IO assumption that concentrated industries are more difficult to enter than less concentrated industries.

Studies by Biggadike (1976, 1979) and by Hobson and Morrison (1983), on the other hand, indicate that new venture entry is more successful when the entered industry has a dominant competitor, one with greater than 49% market share, than when the largest competitor has less than a 25% share. This indicates that a high concentration ratio, rather than being a barrier to entry, may be a factor which makes entry easier.

Hofer and Sandberg (1987) explain why this phenomenon may be exactly the opposite of what had been earlier hypothesized in IO literature. As they explain, if the few industry leaders have a very large share of the market, then each of the other competitors has a very small share of the market.

The key point here is that new entrants almost never compete head-to-head with the industry leader. Rather, they typically seek entry into smaller segments (or niches) of the market where they face either no competition or competition from the smaller competitors in the industry (p. 13).

Since new entrants usually compete with the smaller competitors in the industry, when the industry leaders are relatively stronger, the smaller competitors are relatively weaker and more vulnerable to attack by a new venture.

Peters (1987) offers another possible explanation as to why concentrated industries may be easier to enter than less concentrated industries. Peters suggests that large firms are often myopic. In industries populated by a few large firms, each firm frequently fights for its share of the "mass markets." In making their products as generic as possible, in order to appeal to the largest number of potential customers as possible, these firms often leave several smaller market segments unserved or under-served. These unserved or under-served market segments offer opportunity for smaller new ventures which are able to serve these smaller market segments profitably.

It appears, then, that measuring "industry concentration" is measuring the wrong variable. The fact that an industry is highly concentrated may act simultaneously to make entry more difficult and to make entry easier. Whether a few firms have the lion's share of the market, therefore, is not directly relevant to a potential new entrant. What is relevant, however, is whether there are market segments which are unserved or under-served.

As an illustration, assume that one firm holds virtually 100% of a market (monopoly, the ultimate in "industry concentration"). Assume, however, that it is serving several distinct market segments, each of which has significantly different needs. It is serving them with a single generic product which serves the purpose for all market segments adequately, but does not serve any one segment's needs completely. This situation would be an open invitation to a new venture to enter the industry serving one or more market segments with products which are more specifically tailored to the particular needs of the market segments. This is the situation which prevailed when General Motors took the U.S. automobile market from Henry Ford in the 1930s by offering several models of cars, each designed to appeal more specifically to a single market segment than the Ford Model T, which was designed to be the car for everyone. The high "industry concentration" in this case is not an entry barrier but, rather, an entry gateway.

On the other hand, assume that several firms, each with a small market share (low "industry concentration"), serve a market which is basically homogeneous (an unlikely, yet possible situation). In this market, the needs of every consumer are basically the same. Each firm provides a product which fulfills the needs of every consumer and seen as excellent substitutes for one another. In this case, it would be difficult for a new venture to enter the industry since there are no market segments which are unserved or under-served. In spite of low "industry concentration," the entry barrier is high. Because of these theoretical weaknesses in the industry concentration construct, as well as the empirical contradictions (Biggadike, 1976, 1979; Hobson & Morrison, 1983, versus IO literature), this paper suggests that "industry concentration" should not be considered to be only an entry barrier.

ENTRY GATEWAYS

Yip (1982), in his analysis of entry barriers, suggested that there are certain situations in which mitigating circumstances may neutralize entry barriers, even to the extent of placing a new entrant in an advantageous position vis-a-vis incumbents in the industry. These situations Yip called

"entry gateways." Yip, unfortunately, did not expound on the concept of entry gateways other than to suggest that one such entry gateway is "industry disequilibrium." According to Yip, "industry disequilibrium" can be caused by rapid growth of the industry, recent technological change, high capacity utilization (shortage of supply), and the exit of incumbents from the industry (p. 39).

Yip's definition of entry gateways, however, suggests that sometimes entry gateways may be created, not as a result of any structural condition within the industry, but due to the unique set of skills and resources which are in the possession of the potential entrant. It appears, therefore, that there are two kinds of entry gateways: entry gateways which are a result of the structural characteristics of the industry ("structural entry gateways") and entry gateways created by the unique set of skills, resources, and contacts possessed by the potential entrant ("resource entry gateways"). This recognition of the impact which entry gateways have on entry barriers suggests a broader construct, "ease of entry," which includes entry barriers as affected and mitigated by entry gateways.

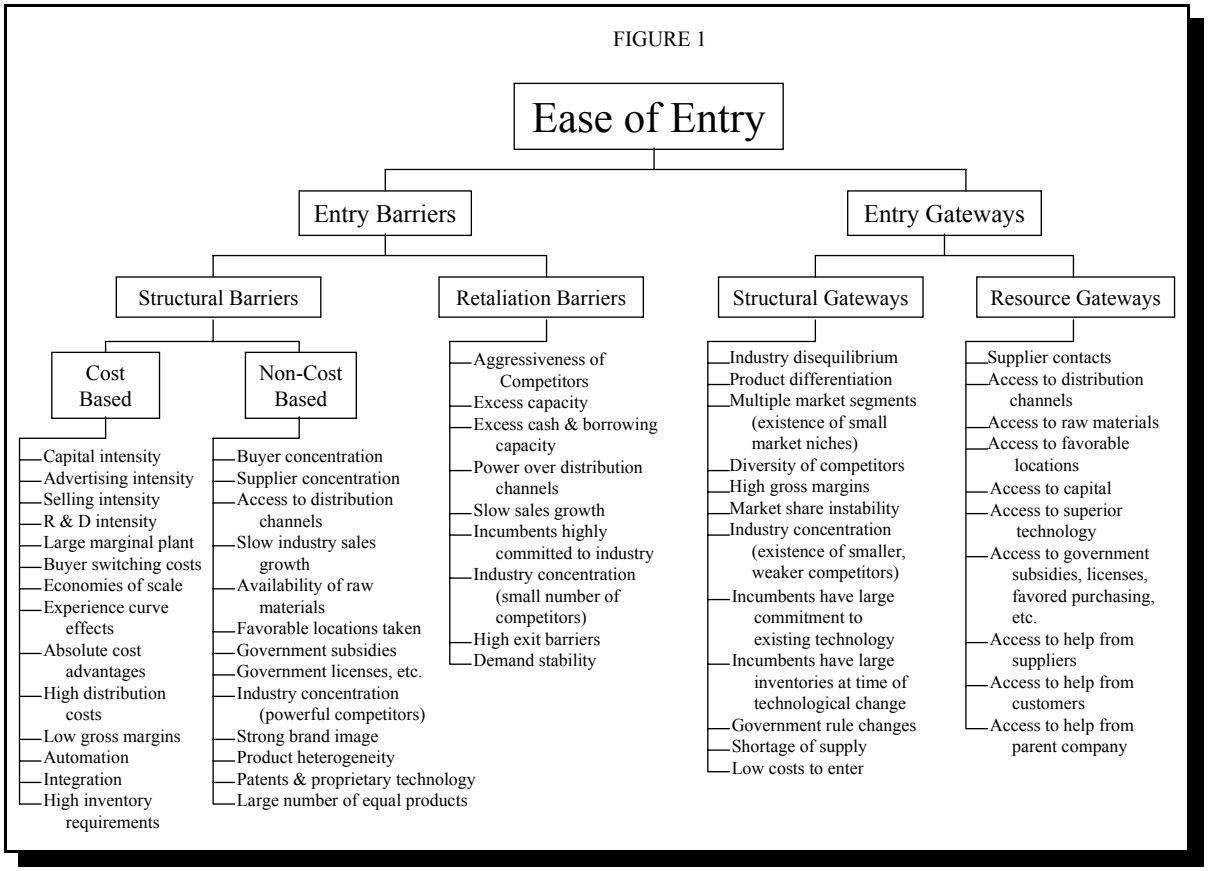
EASE OF ENTRY

Kunkel (1991) surveyed twenty-one works in the fields of Industrial Organization Economics, Strategic Management, and New Venture Performance and identified fifty-eight industry structural variables which have been suggested in those twenty-one works as being significant contributors to the structure of an industry, thus having an impact on business unit performance. Thirty-one of the fifty-eight industry structural variables so identified influence industry structure primarily by their effect on entry into the industry. Figure 1 classifies these variables based on whether their effect would be as an entry barrier or an entry gateway, then sub-categorizes the variables into "structural entry barriers" ("cost based" and "non-cost based") and "retaliation entry barriers," and into "structural entry gateways" and "resource entry gateways."

"Structural entry barriers" are those structural characteristics of an industry which make entry more difficult. The effect of these "structural entry barriers" is cumulative; that is, an industry which exhibits several of the characteristics which create "structural entry barriers" is more difficult to enter than an industry which exhibits only a few of these characteristics. However, one very high structural entry barrier may be more effective at preventing the entry of a specific potential entrant than several moderately high structural barriers.

"Retaliation entry barriers" are those characteristics of an industry which increase the likelihood of strong and effective retaliation by incumbents. The existence of these characteristics does not guarantee that retaliation will be strong and effective, or that it will occur at all; it merely increases the probability that retaliation will occur. A potential new entrant will increase its estimate of the risk of prolonged and unprofitable warfare when retaliation is a strong likelihood, thereby decreasing the expected profits to be gained by entering the industry.

FIGURE 1



An application of the "time value of money" concept in financial theory helps to explain why this decrease in expected profits occurs. The high probability of retaliation results in a decrease in the discounted present value of the future income to be derived from entering the industry. This decrease in the discounted present value of the future income streams is a result of two factors:

1) estimates of the expected future incomes decrease
2) the riskiness of the estimates of future incomes increases, thereby requiring a higher discounting interest rate.

This discounting process has the effect of decreasing the desirability of entering an industry where there is a strong probability of retaliation, compared to an industry where there is little likelihood of retaliation. Thus, the threat of retaliation acts as an entry barrier, and the greater the perceived likelihood of retaliation and the greater the perceived likely strength of that retaliation, the greater the discounting of future income flows and the lower the expected value of entry into the industry.

"Structural entry gateways" are those characteristics of an industry which create influences which mitigate the severity of structural entry barriers or decrease the likelihood of effective

retaliation. Structural entry gateways are also cumulative, i.e., an industry which exhibits several structural entry gateways is easier to enter than an industry which exhibits only one, but one large opening as a result of a structural entry gateway may make more of a difference to a particular prospective entrant than several small structural entry gateways. These entry gateways are created as a result of the characteristics of the industry and do not rely on special skills or resources of the entering firm.

"Resource entry gateways," on the other hand, are particular skills, resources, or contacts which a potential new entrant may possess which act as a mitigating influence on the structural and retaliation entry barriers the potential new entrant faces in the industry it hopes to enter.

Based on the recognition that entry gateways act to mitigate the effect of entry barriers, a more complete construct seems to be "ease of entry," which is a function of entry barriers as mitigated and influenced by entry gateways. "Structural ease of entry" includes those factors which are identifiable as part of the industry structure, including "structural entry barriers," "retaliation entry barriers," and "structural entry gateways."

A major shortcoming of the "entry barriers" construct as developed by Bain (1956) and expanded by Porter (1980) is that each of the sub-variables (for example, "gross margins") is categorized in only two classes, high and low. Low gross margins are viewed as an entry barrier and high gross margins are viewed as the absence of the entry barrier. A much richer construct becomes apparent, however, when gross margins are categorized into three classes, high, average, and low.

Exceptionally low gross margins create an entry barrier, as hypothesized by Porter (1980). Average gross margins imply the absence of this barrier. Exceptionally high gross margins, however, create an entry gateway, making it easier for a new venture to enter the industry since it is so easy to recover entry costs with the exceptionally high gross margins. Many potential investors, entrepreneurs, and corporations are scanning the environment to discover opportunities. Gross margins which are much higher than average invite new entrants.

Many of the sub-variables in Figure 1 appear in more than one list. For example, although industry concentration should not be considered an entry barrier without considering its impact as an entry gateway, Figure 1 includes industry concentration in three lists. First, industry concentration can be considered a structural entry barrier to the extent that concentration encourages powerful competitors to defend their turf. Industry concentration also presents a potential retaliation barrier, since a small number of competitors, at least theoretically, can more easily act in concert to prevent entry and/or retaliate against new entrants. Industry concentration is also an entry gateway, however, because concentrated industries frequently have smaller, weaker competitors and/or unserved/under-served market niches.

Other sub-variables appear in more than one list, with a high (or low) value acting as an entry barrier and the opposite value acting as an entry gateway. For instance, high entry costs (including high capital intensity, high advertising intensity, high selling intensity, high R&D intensity, large marginal plant size, etc.) all act as cost based structural entry barriers. Extremely low entry costs (including low capital intensity, low advertising intensity, low selling intensity, low R&D intensity, small marginal plant size, etc.) act as an entry gateway, making industries with such characteristics easier to enter and making it more difficult for incumbents to build barriers to deter entry.

The construct presented in Figure 1 is involved and includes a large number of sub-variables. This model can be simplified by grouping the sub-variables into sets, as shown in Table 1.

TABLE 1: Ease of Entry Sub-Variables		
Non-cost Based Structural Entry Barriers and Structural Entry Gateways	Determine	Existence of Opportunity for Entry
Cost Based Structural Entry Barriers	Determine	Economics of Entry
Resource Based Entry Gateways (Control of Resources by Entrant)	Determine	Potential Effectiveness of Entry
Retaliation Entry Barriers	Determine	Likelihood of Retaliation
Control of Resources by Incumbents	Determine	Potential Effectiveness of Retaliation

As can be seen in Table 1, each of the five major impacts on entry (existence of opportunity for entry, economics of entry, potential effectiveness of entry, likelihood of retaliation, and potential effectiveness of retaliation) is influenced by groups of sub-variables.

First, the "non-cost based structural entry barriers" as offset by the "structural entry gateways" determine the "existence of the opportunity for entry." Second, the "cost-based entry barriers" combined with the "gross margins" available in the industry determine the "economics of entry." Third, since control of the resources for entry is essential for successful and effective entry, the "resource-based entry gateways" determine the "potential effectiveness of entry." Fourth, the "retaliation entry barriers" determine the "likelihood of retaliation." Fifth, the "control of resources by incumbents" determines the "potential effectiveness of the retaliation."

A DESCRIPTIVE METAPHOR

In order to capture the effect that "entry barriers" and "entry gateways" have on "ease of entry," a metaphor is useful[2]. A new entrant into an industry can be likened to a burglar attempting to gain entry to a mansion. Different barriers are effective against different potential burglars because different burglars have different talents, skills, and resources for overcoming different barriers. For instance, a cat burglar may find walls to be of little or no deterrence, whereas the electronics expert is not foiled by a security system.

The best defense of the mansion is attained by having several types of barriers, high walls, locked doors, security systems, etc. Different barriers will provide different deterrent value to different burglars, but if they can be combined, they can provide a formidable obstacle for any burglar.

The cat burglar who discovers that the mansion has a security system may retreat. The electronics expert who finds that the only unbarred window is on the third floor may choose another target. Whether a specific barrier is effective against a specific potential entrant is a function of the barrier as it matches the particular skills and resources of the potential entrant. Nonetheless, the more barriers there are, the lower the likelihood that any potential entrant will have the skills and resources necessary to overcome them all.

Following the logic of the mansion metaphor, it may be that no combination of locks, doors, walls, and security systems can keep a well equipped and determined professional burglar from entering the mansion. This is not to say, however, that a well secured mansion is as vulnerable to invasion as one which is totally unprotected and open. The walls and door-locks keep the amateur burglar and the casual passer-by from entering, as well as making it more difficult for even the professional burglar to get in, thereby decreasing the probability that anyone will successfully breach the security of the mansion.

From the point of view of the incumbents in the industry, the existence of higher entry barriers increases the profitability of the industry as a whole, as Bain (1956) and other IO researchers suggest. Sandberg (1984, 1986) found that raising the height of entry barriers after the new venture has entered the industry (thereby becoming an incumbent in the industry) significantly increases the performance of the venture.

Orr (1974) established that entry barriers decrease the occurrence of entry, thereby increasing the profitability of the incumbents in an industry with high entry barriers over that of firms in industries with low entry barriers. Orr only classified entry barriers as high or low, however. If the concept of entry gateways mitigating the influence of entry barriers has validity, it would seem that moderate entry barriers would eliminate the majority of potential entrants, whereas even a high level of entry barriers would not totally eliminate the possibility of an individual potential entrant being able to overcome the barriers to entry.

If this were the case, raising entry barriers from low to moderate would have a greater impact on deterring entry than raising entry barriers from moderate to high. This was exactly the finding in one study by Mann (cited in Caves, 1987). Although Mann was at a loss to explain his observations, they are directly in line with what would be expected according to the above discussion of the effect of entry gateways on entry barriers.

THE NEXT STEPS

This paper has made three major points. First, it has recommended that at least one of the five sub-variables which IO theory suggests as making up entry barriers (industry concentration) should not be considered an entry barrier at all, since it has the simultaneous effects of both discouraging and encouraging entry. By showing the mixed contributions which industry concentration makes, this paper has argued that industry concentration, contrary to IO theory, is not strictly an entry barrier.

Second, this paper developed the concept of entry gateways, as introduced by Yip (1982), and has shown that entry gateways should be included along with entry barriers in any analysis of entry into industries. The development of the concept of entry gateways, however, indicates the need for a broader construct than entry barriers when analyzing entry.

Third, therefore, this paper developed and presented the conceptual construct called "ease of entry" to better represent the factors influencing entry. Moving from the general model of ease of entry which included over 30 sub-variables, this paper then simplified the construct to include five influences on entry:

1. the existence of the opportunity for entry
2. the economics of entry
3. the potential effectiveness of entry
4. the likelihood of retaliation by incumbents
5. the potential effectiveness of retaliation by incumbents

This paper has suggested a broadening of existing theory on entry barriers. Nevertheless, much work remains to be done before the theory of ease of entry is fully developed. Among the more important steps are the following:

1. Methods need to be devised to operationalize the five groups of sub-variables.
2. A data base needs to be built which will provide information on a significant number of these sub-variables on several to many industries.
3. Finally, tests of the validity of the new construct need to be conducted so that the theory may be tested and expanded.

Because new venture entry has been shown to be such a major contributor to growth in employment and the health of the economy as a whole (Kunkel, 1991), it is crucial that new venture researchers develop a better understanding of the factors which influence entry into industries and contribute to the success and failure of new ventures. Only by better understanding the barriers to entry and the factors which influence ventures' ability to overcome such barriers can the high costs of new venture failure be reduced.

END NOTES

1 The Ease of Entry concept can be viewed either from the perspective of the new venture attempting to enter the industry or from the perspective of the incumbents in the industry attempting to keep new ventures out. Either positive or negative terms may be used. For example, from the point of view of the incumbents in the industry, positive terms for this concept include "security against entry" and "entry defensibility" and negative terms include "entry vulnerability" and "entry susceptibility." From the point of view of the new venture, positive terms include "ease of entry" and "entry opportunity," and negative terms include "entry difficulty," and "obstacles to entry." Since the perspective of this paper is new ventures, the term "ease of entry" is used.

2 Ortony (1975) argues that when trying to understand complex phenomena, metaphors are not just nice, they are necessary. Weick (1979) explains that although metaphors are only partially complete representations of reality, as are models, metaphors provide three benefits: (1) metaphors provide a compact version of an event without the need to spell out all the details; (2) they enable people to predicate characteristics which are unnameable; and (3) they are closer to perceived experience, more vivid emotionally, sensorially, and cognitively. Therefore, like models, metaphors are tools for enhancing communication.

REFERENCES

Bain, J. S. (1956). *Barriers to new competition*. Cambridge: Harvard University Press.

Biggadike, E. R. (1976). Entry, strategy, and performance. (Doctoral Dissertation, Harvard University). *Dissertation Abstracts International*. *37*, 3006A.

Biggadike, E. (1979). *Corporate diversification: Entry, strategy, and performance*. Cambridge: Harvard University Press.

Caves, R. E. (1987). *American industry: Structure, conduct, performance* (6th ed.). Englewood Cliffs, NJ: Prentice-Hall.

Hobson, E. & Morrison, R. (1983). How do corporate start-up ventures fare? *Frontiers in entrepreneurship research*, 390-410.

Hofer, C. (1975). Toward a Contingency Theory of Business Strategy. *Academy of Management Journal*, 18, 784-810.

Hofer, C. & Sandberg, W. (1987). Improving new venture performance: Some guidelines for success. *American Journal of Small Business*, *12*(1), 11-25.

Kunkel, S. (1991). The impact of strategy and industry structure on new venture performance. (Doctoral Dissertation, University of Georgia).

McDougall, P. (1987). An analysis of strategy, entry barriers, and origin as factors explaining new venture performance. (Doctoral dissertation, University of South Carolina). *Dissertation Abstracts International*, *48*, 980A.

Orr, D. (1974). The determinants of entry: A study of the Canadian manufacturing industries. *Review of Economics and Statistics*, *56*, 58-66.

Ortony, A. (1975). Why metaphors are necessary and not just nice. *Educational Theory*, *25*(1), 45-53.

Peters, T. (1987). *Thriving on chaos: Handbook for a management revolution*. New York: Harper & Row.

Porter, M. E. (1980). *Competitive strategy*. New York: The Free Press.

Sandberg, W. R. (1984). The determinants of new venture performance: Strategy, industry structure and entrepreneur. (Doctoral dissertation, University of Georgia). *Dissertation Abstracts International, 46*, 464A.

Sandberg, W. (1986). *New venture performance: The role of strategy and industry structure.* Lexington: Lexington Books.

Weick, K. E. (1979). *The social psychology of organizing*, Reading, MA: Addison-Wesley.

Yip, G. S. (1982). *Barriers to entry: A corporate strategy perspective*. Lexington, MA: Lexington Books.

CONSUMERS AND TECHNOLOGY IN SMALL BUSINESSES: ARE WE CREATING RELATIONSHIPS OR DISTANCE?

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ABSTRACT

The rapid speed with which technology is allowing consumers to communicate with and contract for services from small companies is having a tremendous effect on the relationship that these organizations have with consumers. However, the area applying interactive communication technology to customers and services is lacking (Sheth & Parvatiyar, 1995). This paper investigates consumer perceptions of technology as it affects the relationship between the consumer and a small business. An exploratory qualitative approach was used to gather pertinent data from a small business. Based on the data collected, technology appears to assist in satisfying consumer needs, but technology may not enrich relationships with customers. The more value enhancing consumer-organization relationships are generally formed through favorable human interface between the consumer and the organization. Our findings suggest that the use of technology by small businesses, while potentially helpful, may create drawbacks with regard to developing steadfast customer relationships. In fact, there is some evidence to suggest that technology may tend to create greater distance between the two parties.

INTRODUCTION

Relationship marketing has been a captivating topic since Dwyer, Schurr, and Oh (1987) published their work on buyer-seller partnerships stating, "both business marketing and consumer marketing benefit from attention to conditions that foster relational bonds leading to reliable repeat business" (p. 12). Other studies followed with each applying relationship marketing to different circumstances such as channel relationships, business alliances, and services marketing. Sheth and Parvatiyar (1995) suggest, "particularly lacking are studies on relationship marketing in the consumer markets" (p. 255). Peterson (1995) echoed this sentiment by stating "research that explicitly focuses on relationship marketing, regardless of whether or not conceptual, empirical, or both, has focused on business-to-business relationships" (p. 278) and not in other areas such as business to customer marketing relationships.

Recently, some important inroads in the use of technology in service encounters were offered by Bitner, Brown, and Meuter (2000). They explored the changing nature of service encounters and offered methods on how these incidents could be improved with the use of technology. Meuter, Ostrom, and Bitner (2000) studied self-service technologies and found that it: (1) increased customer

satisfaction, (2) solved urgent needs, and (3) customers liked its convenience. The dissatisfaction with technology included: (1) technology failure, (2) poor service design, and (3) customer driven failure. Thus, the rapid speed with which technology is allowing consumers to communicate with, and make purchases from, small and large organizations is having a tremendous effect on the relationships with customers. While many studies on customer relationships exist, few have investigated the possibility that technology may actually increase the perceived distance between consumer and the small business owner.

Investing in consumer relationships via technology empowerment of the customer may be a promising avenue to increasing customer loyalty (Coviello, Brodie, Danaher & Johnston, 2002). With interactive communication technology available to many, relationship marketing can move from concept to reality for the first time. The notion of one-to-one marketing sounds attractive, but does this actually breed a unique marketing relationship for a small business compared to their larger rivals? The purpose of this paper is to explore consumer perceptions of technology as it affects the relationship between the consumer and a small business. Does technology truly help us come closer to that one-to-one concept? Understanding how technology affects the consumer-organization relationship is of great importance to companies that are striving to be relationship-oriented. Obviously, understanding the customer's desires regarding relationships and the enormous expenditures geared at satisfying the customer is greatly affected by the organization's role.

This article first addresses technology and consumer's trust and attitudes towards it. Then relationship marketing and building tight bonds with loyal consumers will be discussed to comprehend its connection and interaction with the technology. A qualitative data collection approach is outlined and the analysis and findings are presented. Lastly, discussion of managerial implications and conclusions are offered.

TECHNOLOGY

Customers enjoy dealing with professional people who know how to meet their needs, but what if they are not interfacing with a person at all? Perhaps the organization is using the strength of technology to empower the customer to placate his/her own needs on demand. Defining the term "technology" is necessary in order to comprehend this potentially complex subject. For this article, customer technology interface is defined as the use of computers, automated response systems, or similar devices that allow consumers to satisfy their needs without directly interfacing with a representative of the organization.

Organizations offer consumers technology interfaces for several reasons, including: (1) reducing costs by solving repetitive customer problems without human interaction, (2) offering mass customization of products or services, (3) offering convenience, and (4) building marketing relationships with consumers. Companies are adopting electronic media ranging from automated teller machines, multi-media presentations, streaming video, web based interface, and interactive television. Customers are already able to gather information, order products, and receive support services without ever interfacing with a live company representative. This change in relationship management may help or hinder the ability to have a mental connection with customers, which may place consumer loyalty in peril.

TRUST AND TECHNOLOGY

Researchers, in general, agree that trust is of overriding importance in human contact, but unfortunately, there also appears to be an equally overriding lack of agreement on a suitable definition of the concept). Blau (1964) described trust as essential for stable social relationships. Eisenstadt (1968 p. 114) claimed that the exchange of goods "is possible only on the basis of far-reaching personal confidence and trust." Rotter, Chance, and Phares (1972 p. 40) argued, "a generalized expectancy of trust or distrust can be an important determinant of behavior." The research cited above deals exclusively with people interacting with other human beings. With the advent of computer systems and technology replacing functions formerly performed by individuals (e.g., automated credit card verification, corporate voice mail, etc.), trust research is evolving. Zucker (1986) believed that trust was based upon "fair" social rules and generally accepted "rights" for each of the participants in an exchange. However, is there trust in an exchange if one of the participants is a machine? Do consumers perceive themselves exchanging with technology or with the small business that the technology represents?

Butler (1991 p. 647) concluded that research on trust has converged on the beliefs that (a) trust is an important aspect of interpersonal relationships, and (b) trust in a specific person is more relevant in terms of predicting outcomes than is the global attitude of trust. Thus, trust and the forming of relationships may be greatly affected by the insertion of technology into the interaction between the consumer and the small business. Besides trust, customers' general attitudes toward technology will intuitively be important in understanding how they will relate to the new mode of fulfilling their needs.

ATTITUDE TOWARDS TECHNOLOGY

Fishbein and Ajzen (1975) define an attitude as "a learned predisposition to respond in a consistently favorable or unfavorable manner with respect to a given object." Inevitably, consumers form attitudes about the technology they are using to satisfy their needs and wants. As consumers come in contact with technology, Fishbein and Ajzen's definition suggests, consumers form opinions and cognitively decide if they hold positive or negative judgments.

An example of how technology can assist in building stronger marketing relationships can be seen in the form of the fax machine over a decade ago. Deli owners in Manhattan wanted to attract and to keep customers so they advertised that fax machines could be used to fax food orders. Using fax technology, customers no longer needed to wait on hold on the phone to place their lunchtime orders; a simple faxed request took care of it. Employee time spent taking orders was reduced and employee mistakes were eliminated. Hungry consumers were served "take out" orders quicker and were elated about the ease of the new ordering method. The customers were satisfied (Kochak, 1989). The ability to use the fax technology was not a cognitive stretch for most people; they easily learned to make technology work for them and garnered a feeling of satisfaction.

Drawing from a banking community example, it was found that many customers will withdraw funds via an ATM, but will deposit money only when dealing face-to-face with a human representative of an organization (Slater, 1991; El-Haddad & Almahmeed, 1992). It is obvious that

many customers have not formed an attitude of trust when it comes to ATM technology correctly handling their deposits. A fear exists that the technology is not trustworthy, that it is cumbersome to understand/use, and that the feeling one receives from using technology is not the same feeling one garners from interacting with another human. One president of a New York-based communications firm went so far as to suggest, "customers hate technology." At the height of the introduction of the CD-ROM, it was estimated that 40% of computer owners who owned the drives never used them (1995). Perhaps a similar statement could be inferred regarding those who have DVD drives but never use that capability. People are generally leery of phenomena they cannot readily grasp.

Repeated transactions may not infer a prelude to a market relationship. Perhaps a better indicator is when the seller and the consumer nurture a bond with each other. Activities that add value through partnering actions are seen as relationship builders (Webster, 1992). Certainly a common method to nurture a relationship is by making the organization accessible to the consumer. The increased use of 800 toll-free numbers over the past 20 years is evidence of the growing emphasis on customer service and the importance of customers having ready access to organizations.

RELATIONSHIP MARKETING

Prior experience is one anchor that consumers use in order to evaluate service, trust, and treatment they receive from an organization. Laing (1995) found, while studying financial service offerings, that the crucial issues to emerge from the research were "the significance attached to tangible surrogate cues in evaluating alternative providers and, more importantly, the weight attached to prior experience of, and relationship with, service providers." Laing surmised, "the clear lesson for such service providers is that the ongoing, long-term management of interorganizational relationships lies at the heart of the effective marketing of professional services." While Laing focused on relations between organizations, the finding that people attach high importance to relationships, even when dealing with impersonal or intangible service, is relevant to individual consumers. In other words, people look to previous human interactions to determine the level of relationship they feel they have with other humans or organizations.

Relationship marketing with consumers has been defined as an ongoing cooperative market behavior between an organization and consumers. Sheth and Sisodia (1995) proposed that relationship marketing is based on "long-term, mutually beneficial arrangements in which both the buyer and seller focus on value enhancement through the creation of more satisfying exchanges" (p.15). One consumer relationship that has proven to be a win-win situation is the bridal registry gift service. Crate & Barrel and Macy's, early pioneers in this service, offer the bride and groom an easy way to identify products they wish to own when starting their lives together. The guests are offered an easy way to locate the desired gifts in one location and are assured not to purchase undesired duplicates. The bride and groom can make their selections, and the retailers who specialize in this service can offer special assistance to the potentially lucrative customer segment. In the process, retailers gain a captive market and the wedding guests (i.e., consumers) can reduce their shopping costs, time spent looking for that all-important gift, and ultimately, purchasing exactly what the newlyweds want.

Technological progression makes it possible and affordable to nurture relationships with customers across many industries. These bridal registry retailers provide touch-screen video displays, making it possible for customers, by themselves, to generate a listing of the gifts that the bride and groom desire, including pricing information. Previously, customers had to find a retail company employee and have them stop whatever they were doing in order to generate a gift list for the customer. Today, without having to wait for an available employee, customers are technologically empowered and can easily perform the touch-screen commands, retrieve the registry list, and be on their way shopping within moments. This is yet another example in a long list of consumers who are now able and willing to perform these functions for themselves. However, not all technological advances are embraced in the same fashion. Many organizations believe they are enhancing customer relationships via technology; however in some circumstances, they may be simply adding distance between themselves and their consumers.

DATA COLLECTION

The sample group for this study was comprised of individuals who are customers of a small business, having less than 100 employees with approximately $6 million in annual revenue. Their customers subscribe to a service that allows access to real-time on-line financial data pertaining to stock market transactions. The financial information sent to customers via electronic and wireless systems to assist in making "buying" and "selling" decisions. Hence, these consumers have been exposed to many different types of technology interfaces in order to earn a living, and generally have had extensive use of interactive voice response systems. Interactive voice response systems allow customers to access information on their financial obligations, new monthly pass codes, availability of inventory, transferring of funds, technical assistance, and other similar services. The sample segment used may be considered somewhat progressive in their adoption of technology-related services, and their incidences of customer-related technology interfaces for several reasons, the least of which is the fact that they are paying a high monthly fee to receive stock market information via electronic communication system.

The cooperation of senior management at the real time data service firm was secured and a list of current users in the South and Southeast portions of the U.S. was made available. Customers were contacted via phone and all agreed to be interviewed and had used the voice response system more than once. Consumers using the voice response system have been chosen as the sample group because: (a) interactive phone technology is a growing source of interaction between consumers and organizations offering goods and services, and (b) it allows follow-up opportunities with participants because the user must first enter a user code to gain access to information, which is noted in the organization's computer system.

"A systematic analysis of customer comments and reactions in the form of qualitative data can generate information which is rich, insightful, and managerially useful" (Pedrick, Babakus & Richardson, 1993, p. 27). Thus, interviews were conducted to explore: (1) the reasons for using interactive voice response system technology, (2) perceptions of how the relationship with the marketer are affected by the use of this technology, and (3) the enhancing effects or the degenerative effects the use of technology has on the relationship. The demographic data on each subject in this

study appears in Table 1. Most of the users in this study were males aged 30-45, who owned one or more computers, and were familiar with technology so they could track rather large amounts of money in the stock market.

TABLE 1
Demographics

Name	Occupation	Age	Money in Stock Market
Clive	Financial Risk Management Consultant	41	$ 90m
David	VP Technology Services for Portfolio Company	40	$ 35m
Bruce	Personal day trader	30	$ 55K
Mike	Personal day trader	38	$ 100K
Bill	Retired/day trader	56	$ 10K
Steve	Personal day trader	48	$ 225K
Julia	Former artist/Homemaker	58	$ 750K

ANALYSIS

Both qualitative and interpretative methods for data evaluation were utilized. The objective of the qualitative approach was to understand how consumers interpret their own motivations and behaviors (Calder & Tybout, 1989). Data are considered to be "self-reflexive" in this regard. Qualitative data are, in essence, the implicit and explicit ideas that consumers have about their own behaviors. The qualitative approach proves advantageous when seeking to understand the effects that technology interfaces have on consumers. The data were continually analyzed as collected in order to note emerging trends, and to identify positive and negative effects on relationship marketing between consumers and organizations. This procedure assisted in generating subsequent questions and guided additional data collection.

FINDINGS

In this section, abbreviated experiences, opinions, and beliefs are offered to illustrate what consumers are thinking and how they feel with regards to marketing relationships. The findings are organized around the central topics of technology experience and perceptions, technology attitudes and trust, and relationship marketing intensity that emerged as consequential through our analysis.

Technology Experiences & Perceptions

The subjects were asked a yes-no question to whether they have used Interactive Voice Response (IVR) phone systems or similar technology. All gave affirmative answers. They were then prompted by a "tell me about your experiences" statement. The experiences described led one to infer that the encounters overall with customer-oriented technology had left them with somewhat negative feelings. Table 2 holds summation of the data collected referring to the subjects' experiences and perceptions of the IVR system. One of the respondents stated that an IVR system builds animosity between the marketing organization and him. Steve mentioned that after the IVR figured out where to send his call, he received someone else's voice mail, so he did not know how to speak directly with that person. He remarked it was a "net-net time waster," indicating that for all technology could have done for him-it failed him. This sentiment was echoed by David who was annoyed at "wading through layers (of phone commands) to get to who you need." Bill suggested, "if you know what you are looking for, technology is fine."

The subjects were subsequently asked to offer their personal perceptions of the IVR system (i.e., was it helpful, tough to manipulate, etc). Again, the replies were somewhat disapproving. "It was efficient, but not respectful of the person on the phone," according to Steve. Rigidity was the perception that Bruce had of the IVR and other technologies as well. "Computers will not give you a break, you cannot get anything special from them," he argued. Clive's IVR perception was that it saves money for the marketing organization and he hopes "they pass that savings on to us (the customers)." Julia was the only one with a purely positive perception, mentioning, "it helps me get going in the right direction." Although this sounds as if the IVR helps route her call, she does not count on it to answer her questions.

As with most commercial advances, consumers had varying reasons for using technology to obtain the products and services they needed or desired. All but one felt they were coerced into using the IVR technology in order to get their questions answered. Most respondents clearly echoed the sentiment that they were '"forced" into using it. David did mention he belongs to the "President's Council" at one company which has a special phone number for its priority clients so a "live" person answers the phone and personally assists him, immediately.

Technology Attitudes and Trust

Trust emerged based on the comments regarding attitudes toward technology. The subjects had positive or very positive attitudes towards technology. The comments used to express attitudes towards technology included: "I love it," "It's great," and "It helps me to do what I want." There were a few concerns voiced as well: "I don't want to learn all the different systems, and technology must make the customer the priority when it is being designed."

TABLE 2
Experience and Perceptions of IVR* Technology

Name	Technology Experience	Examples	Technology Perception	Examples	Reasons for UVR Use	Examples
Clive	Animosity	I built up incredible animosity towards them using their phone system.	Saves Money	It saves money for the company. I hope they pass that savings on to us.	Forced	Must go through it to get a person
David	Helpful/ Annoying	You must wade through layers to get to who you need. 2 out of 3 questions cannot be answered by tech.	Limited	It's limited in its capacity. Given the choice, I think a rep is more helpful.	Forced	Generally, I am forced.
Bruce	Unsophisticated	If I need something important, I want to get to a person.	Rigid	Computers will not give you a break; you cannot get anything special from them.	Forced	I am forced into it.
Mike	Fine	Works fine, but it must allow me to get a person if I want to.	Limited	Problems can only be solved by people	Forced	Most companies start you off in an IVR system
Bill	Fine	If you know what you are looking for, technology is fine.	Limited	Technology will do what it is told.	Forced	You don't have a choice.
Steve	Time Waster	After working through several menus, you must leave a message, never learning how you contact a person directly.	Efficient	It is efficient, but not respectful of the people on the phone	Forced	I have no choice
Julia	Fine	I think they are fine.	Helpful	It helps me get going in the right direction	Forced	It's easy to 'talk' with it and people are not generally available.

* Interactive Voice Response System

The subjects were asked to offer a self report on their level of technological expertise. The scale had anchors of "lost soul" and "guru." All the subjects, with the exception of one, rated themselves a "6" or higher. Julia gave herself a 2, and Steve noted he was near 10 for most technologies, but in certain circumstances he appeared to be a 3. Table 3 is a synopsis of the data collected referring to attitudes and trust of technological interfaces.

Given their attitudes toward technology, the subjects were asked whether they would rather speak to a person or use an IVR system. Unequivocally, customers desired to speak with a person.

Their reasons were rather identical, stating that machines cannot solve their problems, people are interactive, and people are experts who help resolve problems. David offered the only example when speaking to technology devices was better than a person. He stated, "for some companies, I'd give my right arm not to speak to one of their reps as they are generally incompetent".

TABLE 3
Attitudes and Trust of IVR Technology

Name	Attitude Towards Tech	Examples	Rather speak to Person or IVR	Examples	*Ranking 1-10 1=lost 10=Guru	Trust Y/N	Examples
Clive	Very Positive	I love it!	Person	People are interactive	9.5	Y	It does what you tell it to do.
David	Positive	It must be quick and easy; the customer must be the priority.	Depends	For some companies, I'd give my right arm not to talk to one of their reps.	8-9	Y	If designed well, it can perform simple things easily.
Bruce	Very Positive	It's great!	Person	A person can resolve my problems.	7-8	Y	It's okay for simple things.
Mike	Very Positive	It's great! Being online is helpful.	Person	You can resolve a problem better with a person.	7	Y	I adopt nearly all technologies.
Bill	Challenging	I don't want to learn all the different systems.	Person	I would like to speak to people as my first choice.	6	Y	Electronics is a way of doing something routine very fast. Technology can remember things and calculate things – period.
Steve	Very Positive	It's great; It helps me do what I want.	Person	A machine will not solve my problems.	3-10	Y	I trust technology more than people, it is less likely to make mistakes.
Julia	Positive	It's great, but I don't have time to learn computers.	Person	A person is an expert, or at least, he can direct your call to someone you is.	2	Y	Technology does not allow for mistakes.

* Respondents were asked to rank themselves 1-10 on their technological abilities.

Relationship Marketing Intensity

An important aspect of creating relationships with customers is the ability to discern the determinants of that relationship. An inquiry was made into the determinants of the relationship between consumers and the marketing organization. Table 4 contains the explanations offered to this question. Steve mentioned his relationship is based on the company "doing exactly what they say," but most revealed that their relationships are built upon working with other individuals. "I want nice, friendly people" and "I do want people to know my name" were mentioned by Julia and Clive, respectively. David was very candid stating, "without a personal contact at the company, I don't feel I have a relationship." Bill added to this by stating, "you don't have relationships with companies, your relationship is with a person." Bruce noted that his feeling of a relationship is based on "consistent service," and he forges a relationship with one person in order to reach that goal.

Having articulated the criteria for forming relationships, the subjects were asked whether customer-oriented technology played a part in their relationships with organizations. The overwhelming majority said that technology had little or no effect on the relationships that they formed with companies. "Technology is not a relationship, people offer relationships," said Bruce. Mike felt that technology was inconsequential with regards to relationships. He stated, "I don't see technology as a relationship. It can help me, but it doesn't cement a bond." Julia was succinct by stating, "no, it (technology) doesn't play a part." Clive believed that "certain responses can be handled by computers, but my questions are not answerable by a machine," inferring that a real person must answer his questions in order for his problems to be resolved. Steve was the only one to feel empowered by customer-oriented technology, stating it makes him feel in control. David felt that "relationships and technology are mutually exclusive." This conclusion is somewhat similar to the findings of one global hotel chain. They found that while guests were pleased by efforts to make their stay hassle-free, they were actually more satisfied when the hotel staff responded personally when something was amiss (Schrage, 2001). Ultimately, it may be the customer's perception that others are attempting to solve their individual needs that creates a satisfying bond. Table 4 consists of the comments made by the subjects as they pertain to relationship marketing.

DISCUSSION AND MANAGERIAL IMPLICATIONS

This exploration into how consumers use technology to interface with organizations has revealed that consumers use technology for various reasons, convenience being one of them. Each subject felt that technology was instituted to assist them, or allowed access to information not previously available outside of regular business hours.

Without exception, each person stated that they trusted technology, and their self-proclaimed attitudes towards technology were extremely positive. This is surprising since the information gathered from the respondents also suggested their experiences with technology were less than satisfying (Table 2 data). All but one person stated they were "forced" into using the IVR (Interactive Voice Response) system when attempting to contact the organization. The "I was forced" response indicates they felt their choices were being limited for them and while this sounds restrictive, these customers continued to look upon this technology interface favorably. This is

somewhat analogous with how Sheth and Parvatiyar (1995) framed relationship marketing. The authors suggested that, "from the consumer's perspective reduction of choice is the crux of their relationship marketing behavior" (p. 256). They see the ability for a firm to simplify a customer's choice process as a natural outgrowth of relationship marketing.

TABLE 4
Relationship Marketing Intensity

Name	Determinants of Relationships	Examples	Customer-oriented Technology & Relationships	Examples
Clive	Not seeking relationships; Name recognition	I'm a bit tech-y and introverted, so I am name recognition not looking to build long-term relationships with companies. But, I do want people to know my name. Companies are letting their relationships go. You never talk to the same person twice.	No significant effect	Certain responses can be handled by computers, but my questions are not answerable by a machine.
David	Personal touch; Name recognition	I like working with a small number of name recognition people, even just one person. They know me, I know them. I prefer this relationship. Without a personal contact at the company, I don't feel I have a relationship	Inconsequential	Technology can improve customer service, but cannot improve customer relations. Technology is a tool. Relationships and technology are mutually exclusive.
Bruce	Consistency	I want consistent service. I try to forge a relationship with one person.	Inconsequential	Technology is not a relationship, people offer relationships.
Mike	Responsive	I want a company to be responsive and return my calls.	Inconsequential	I don't see technology as a relationship, it can help me, but it doesn't cement a bond.
Bill	Name recognition	You don't form relationships with companies, your relationship is with a person. If you can call and ask for 'Joe', then you have a relationship. You've got to have a name.	Inconsequential	Human reassurance is not gotten from computers. Technology is the chain to the customer. I won't bother 'Joe' if technology can get me the information.
Steve	Integrity	My relationship is based on them doing exactly what they say they'll do.	Empowered	Technology makes me feel in control.
Julia	Personal touch	I want nice friendly people. I like to ask someone questions. For things that need explaining, I like to speak with. However, if it's easy, then I'll deal with technology	Not applicable	No, It doesn't play a part

A vast majority of those questioned felt that no relationship was being built unless during the exchange process, they had an opportunity to cement a personal bond with an organizational representative. Without fail, the benchmark used for deciding if a "relationship" existed for individual consumers was the ability to ask for someone by name. Most respondents who asserted that a relationship existed between them and an organization stated that the relationship was based on human interaction. Each respondent noted that at some point in the relationship, an individual at the organization forged a positive bond with them- technological interfacing was not the reason for a feeling of solidarity. Crosby, Evans, and Cowles (1990) found that clients' expectations of doing future business with a salesperson depended on the quality of their relationship. The same conclusions can be drawn here. Customer-oriented technology had inconsequential effects on consumer feelings with regards to nurturing relationships. Recalling the information from Table 4, consumers base their "relationships" on varied criteria, with "personal contact" a recurring theme.

Each respondent looked for a main contact, and found it easy to feel detached in today's predominately technological business environment. Barlow (1992) concluded "while it is true that I buy a loaf of bread in the supermarket from neither the baker, nor the owner of the supermarket chain, I do buy the bread directly from someone." This is the general finding of this study; someone from the organization must extend themselves in the exchange process in order for consumers to sense any type of relationship developing.

Perhaps a sense of "closure" is missing when using automated customer technology. Someone to acknowledge that the consumer's problem is real, important, solvable, and resolved, was what the customers were looking for to help them correct their problems. The data collected clearly suggests that when consumers have dilemmas they feel that technology cannot assist them adequately. In the consumer's mind, problems require a custom solution and technology will not deliver the desired outcome. Thus, they asserted that relationships would not be developed by technology: "you don't form relationships with companies, your relationship is with a person," was the overriding opinion in the data collected. The finding that technology had no significant effect on relationship forming is highly surprising given the sample used in this study. These consumers are receiving a technology-based service used to monitor considerable sums of money in the financial markets. One might think these people would be predisposed to build relationships based on the customer-oriented technology being offered to help them reach their consumer objectives. However, these self-reported technology "gurus" (see Table 3) who might be satisfied with the service itself, did not claim to have a relationship with an organization without a personal contact at the firm.

A poignant assertion was offered by David, he stated, "technology can improve customer service, but cannot improve customer relations." This strong statement summarizes the general consensus of the respondents. This sentiment exists in other environments as well. Research conducted by the Hospitality Information Technology Association found that 81.1% of all respondents felt that technology enhanced customer satisfaction, but this satisfaction did not necessarily equate to loyalty (Van Hoof & Collins, 1995). Van Hoof and Collins proposed that while various types of technology can assist consumers to get what they desire, it has no effect on the intensity of the relationship between customer and marketing organization.

When given a choice, the overwhelming majority of subjects would like to speak with a person instead of an IVR system because of the inability of a machine to satisfy their requirements. However, customer relation personnel have a tendency to be a greater expense than technology, so organizations are moving away from using representatives to cultivate relationships and are hoping that convenience and mass customization will keep consumers satisfied and loyal. For instance, First National Bank of Chicago gave their customers strong encouragement to use the bank's ATM technology when they instituted a $3 fee to use "live" tellers on certain accounts (Rubel, 1995). In this vein, First Chicago hoped to reduce costs (by increasing costs to the customers), yet offer a similar level of banking satisfaction. This is a cherished goal for organizations because as Sheth and Sisodia (1995) noted, marketing expenditures should decline overtime per customer, or the money is not being well spent.

The results from our study suggest that the use of technology in certain instances is favorable for satisfying basic needs until the customer has a problem. In essence, customers are satisfied with technology up to a certain point before they feel that they need, in this case, to speak to a human being to satisfy their customer relation demands. Likewise, it may be inferred that technology is more appropriate for relationship marketing when the customers need only routine or basic transactions (e.g., checking the day's stock prices). Conversely, when customers have specific inquiries that deal with much higher stakes, either personal or business-related (e.g., problems concerning billing; management of other's stock portfolios), they would prefer to deal with humans instead of technology.

CONCLUSIONS

Advances in computing and communications technology now put the consumer in a powerful and possibly lonelier position. To many, technology is purported to allow one-to-one marketing relationships to develop, but consumers suggest that relationships are garnered only through company representatives. Perhaps outstanding customer service may be the only sustainable competitive advantage in the future. Years ago, it was the person-to-person contact with customers that allowed relationships to grow. Currently however, rapid technological advancements are seen by many as a way to better serve customers and cultivate favorable relations with them. The former is probably true, but the latter is not always advantageous as evidenced by this study.

Based on the data collected, it is our contention that technology can and should play a major role in satisfying and serving consumers of small businesses. Conversely, organizations must understand that Interactive Voice Response systems, and other related technologies, may not always enhance marketing relationships with customers, specifically in marketing relationships that require more than routine requests that cannot be easily satisfied by technology. For these types of customers, organizations would be better served to stress human interaction to create favorable relationships with their customers and therefore provide greater customer satisfaction and retention.

It appears that Interactive Voice Response systems, and the like, are used by organizations to satisfy customer demands and save money. However, customers feel this technology creates distance between them and the company. Fierce and growing competition is leading organizational

to use automation to compete, but in the long run, it may be human contact that is the cheapest and most effective way to cultivate relationships with consumers.

Our findings are based on only a single case study of one small business in the financial services sector. These findings may not generalized to other small business in other sectors of the economy until further research is conducted. However, our intent was to provide some insight into how the use of technology can either enhance or deter the relationship between the small business and their customers. Hence, it is necessary for managers to consider what is the best use of technology in creating a unique value-added relationship with the customer that larger competitors cannot provide.

REFERENCES

Barlow, R.G. (1992). Relationship marketing: The ultimate in customer satisfaction, *Retail Control, 60*(3), 29-37.

Bitner, M.J., Brown, S.W. & Meuter, M.L. (2000). Technology infusion in service encounters, *Journal of the Academy of Marketing Science, 28*(1), 138-49.

Blau, P.M. (1964). *Exchange and Power in Social Life,* New York: John Wiley, Inc.

Butler, J.K. (1991). Toward understanding and measuring conditions of trust: Evolution of conditions of trust inventory, *Journal of Management, 17*, 643-663.

Calder, B.J. & Tybout, A.M. (1989). Interpretive, qualitative, and traditional scientific empirical consumer behavior research, In Hirschman, E. (Ed), *Interpretive Consumer Research,* Association for Consumer Research, 199-208.

Crosby, L.A., Evans, K.R. & Cowles, D. (1990). Relationship quality in services selling: An interpersonal influence perspective, *Journal of Marketing, 54* (July), 68-81.

Coviello, N.E, Brodie, R.J., Danaher, P.J. & Johnston, W.J. (2002). How firms relate to their markets: An empirical examination of contemporary marketing practices, *Journal of Marketing, 66*(3), 33-46.

Dwyer, F.R., Schurr, P.H. & Oh, S. (1987). Developing buyer-seller relationships, *Journal of Marketing, 51* (April), 11-27.

Eisenstadt, S.N. (1968). *Max Weber on Charisma and Institution Building*, Chicago: Chicago University Press.

El-Haddad, A.B. & Almahmeed, M.A. (1992). ATM banking behavior in Kuwait, *International Journal of Bank Marketing, 10*(3), 25-32.

Fishbein, M. & Ajzen, I. (1975). *Beliefs, Attitude, Intention, and Behavior: An Introduction to Theory and Research,* Reading, MA: Addision-Wesley, Reading.

Kochak, J. (1989). Get the fax, *Restaurant Business Magazine, 88*(7), (May), 123-128.

Laing, A. (1995). The marketing of financial services to independent distributors, *Journal of Services Marketing, 9*(4), 6-18.

Meuter, M.L., Ostrom, A.L., Roundtree, R.I. & Bitner, M.J. (2000). Self-service technologies: Understanding customer satisfaction with technology-based service encounters, *Journal of Marketing, 64*(3), 50-64.

Pedrick, D., Babakus, E. & Richardson, A. (1993). The value of qualitative data in quality improvement efforts, *Journal of Services Marketing, 7*(3), 26-35.

Peterson, R.A. (1995). Relationship marketing and the consumer, *Journal of the Academy of Marketing Science, 23*(4), (Fall), 278-281.

Rotter, J. B., Chance, J.E. & Phares, E.J. (1972). *Applications of a Social Learning Theory of Personality*, New York: Holt, Reinhart and Winston.

Rubel, C. (1995). Banks should show that they care for consumers, *Marketing News, 29*(14), 4.

Schrage, M. (2001). Make a mistake, *Fortune,* December 24, 184.

Sheth, J.N. & Parvatiyar, A. (1995). Relationship marketing in consumer markets: Antecedents and consequences, *Journal of the Academy of Marketing Science, 23,* (Fall), 255-271.

Sheth, J.N. & Sisodia, R. (1995). Feeling the heat, *Marketing Management, 4*(2), (Fall), 8-23.

Slater, R.B. (1991). A sharper image for ATMs, *Banker's Monthly, 108*(7), 30-31.

Webster, F. (1992). The changing role of marketing in the corporation, *Journal of Marketing, 56* (October), 1-17.

Van Hoof, H.B. & Collins, G.R. (1995). Technology future bright, *Hotel & Motel Management, 210* (June 19), 23, 28.

Zucker, L. G. (1986). Production of trust: Institutional sources of economic structure 1840-1920, In Staw, B.M.& Cummings, L.L. (Eds.), *Research in Organizational Behavior*, Greenwich, CT: JAI Press, *8*, 53-111.

AN EMPIRICAL EXAMINATION OF THE RELATIONSHIP OF PERSONALITY AND THE PROPENSITY FOR SELF-VENTURING

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Like human beings, firms are constantly being born that cannot live. Others may meet…death from accident or illness. Still others die a "natural" death, as men die of old age. And the "natural" cause, in the case of firms, is precisely their inability to keep up the pace in innovating which they themselves had been instrumental in setting in the time of their vigor.

(Schumpeter, 1934, pp. 94-95)

ABSTRACT

Over the last several years, a handful of researchers have shown renewed interest in demonstrating the relationship of cognition and entrepreneurial intent. Drawing from this Herculean effort, the authors continue the search for a personality linkage. One hundred and seventeen undergraduate students from two diverse southwestern universities were administered the Myers-Briggs Type Indicator (MBTI) and the Carland Entrepreneurial Index (CEI). Results provide further support of a cognitive relationship as well as implications for continued research.

INTRODUCTION

Since 1984 (Carland, Hoy, Boulton & Carland) considerable debate has centered on defining the entrepreneur. One school of thought has taken (what these authors consider) the easy way out by maintaining that anyone that engages in self-venturing is an entrepreneur. At the other end of this continuum, an aggressive, robust, and maybe (some may contend) fool-hearty group still contends that understanding the cognitive relationship of the individual and the venture is critical for better appreciating entrepreneurship.

The purpose of this paper will be to continue the monumental task of searching for a relationship between personality and the propensity to self-venture. It is worth repeating, the intent of this research is not to provide evidence of differences between small businesses and entrepreneurs, but rather, to accept the conclusions drawn by Carland, Carland and Hoy (1992), Jackson, Watts and Wright (1993) that: the entrepreneur and his/her activity is best defined on a

continuum; and, that there exists a "clear and pressing need to establish a valid measure of entrepreneurship" (Carland, Carland & Ensley, 2001). We also hope to provide further support to the convergent validity of the CEI with the MBTI as a means of defining the entrepreneur.

To accomplish this, we provide a brief history of the "E" debate, an overview of the instruments recommended for future research, and an empirical examination of the relationship between the two instruments. The ultimate outcome is that we contribute a small part in ensuring that entrepreneurship research does not suffer a slow death as described by Schumpeter's opening quote.

THE LINE IN THE SAND

From the mid-fifties into the mid-eighties, considerable discussion of the entrepreneur and his/her characteristics was carried on regularly in the literature. As Table 1 suggests, characteristics assigned to the entrepreneur were quite diverse. For the most part, this early research paid little if any attention to the type of small businessperson being investigated. Carland, Hoy, Boulton and Carland (1984), however, categorically insisted that our point of research orientation had to be narrowed. A "Mom and Pop" small business owner had to be different from one that started a venture that grew into a larger corporation. Many applauded quietly while others beat their war drums to the contrary.

Probably the most vocal of the dissenters was Gartner (1988). Gartner, is essence, drew the line in the sand and strongly declared that it does not matter-self-venturing is entrepreneurship. Considering that there had already been recent calls in the management and marketing disciplines for a more scientific, quantitative approach to research, it is no surprise that many joined Gartner's camp.

For the most part, the years since have witnessed a limited approach to discussion of cognition and the entrepreneur. The Carlands have held fast in their convictions to expand research in this area (Carland, Hoy & Carland, 1988; Carland, Hoy, Boulton & Carland, 1988; Carland & Carland, 1991, 1992, 1997, 2001; Ensley, Carland & Carland, 1998; Stewart, Carland & Carland, 1996; Carland, Carland & Stewart, 1996; Carland, Carland & Carland, 1995). Fortunately, a few others have followed in the vein of the "cognitive connection" (Forsgren, 1990; Ginn & Sexton, 1990; Sexton & Ginn, 1990; Brodzinski, Scherer & Wiebe, 1990; Dugan, Feeser & Plaschka, 1990; Jackson, Watts & Wright, 1993; Reynierse, 1997; Tampere & Koiranen, 2000).

Still others (most very recently) have actually offered specific approaches to take. It was suggested that we should explore "potential" (Palmer, 1971), "conative (motivational and volitional) constructs" (Ruothotie & Koiranen, 2000), "psychological ownership" (Pierce,Kostova & Dirks, 2001), "psychological correlates" (Stewart, 1996), "entrepreneurial teams" (Ensley, 1999), "skills" (Robinson & Herron, 2001), and "strategic continuums" (Jackson, Watts & Wright, 1993). While many declare the need-none have offered the validated means to accomplish the task.

The Carlands have done just this by suggesting that it is quite appropriate to apply multiple measurement scales to the "E" phenomenon (Carland, Carland & Ensley, 2001). They have not stopped with just the idea-they have put forth the effort to provide the initial support for answering the question of who is the dancer.

Table 1
Entrepreneurial Characteristics

Date	Author(s)	Trait
1954	Sutton	Desire for Responsibility
1959	Hartman	Source of Formal Authority
1961	McClelland	Need for Achievement
1963	Davids	Ambition, Independence, Self-Confidence
1964	Pickle	Drive, Human Relations Skills
1971	Palmer	Risk Taker
1973	Winter	Need for Power
1974	Borland	Internal Locus of Control
1977	Gasse	Personal Value Orientation
1978	Timmons	Drive, Moderate Risk Taker
1980	Sexton	Energetic

Source: Carland, Hoy, Boulton & Carland, 1984

PRIOR RESEARCH

Myers-Brigg Type Indicator (MBTI) and the Entrepreneur

Before discussing the prior research accomplished with the MBTI in terms of entrepreneurial personality traits, a general overview of this instrument is warranted. One of the most succinct explanations of this instrument was provided by Myers, McCaulley, Quenk & Hammer (1998):

The purpose of the Myers-Brigg Type Indicator (MBTI) personality inventory is to make the theory of psychological types described by C. G. Jung (1921/1971) understandable and useful in peoples' lives. The essence of the theory is that much seemingly random variation in behavior is actually quite orderly and consistent, being due to basic differences in the way individuals prefer to use their perception and judgment (p. 3).

The means of accomplishing the separation needed to define types is based upon responses to forced choice questions that focus on four basic principles. These principles are: where does an individual prefer to focus their energies-internally or externally; how does an individual prefer to perceive stimuli-through their senses or through intuitive relationships; how does an individual make judgments-impersonally based upon logical consequences or rather on personal or social values; and how does an individual prefer to deal with the world-either through thinking or feeling or through

sensing or intuition. These dichotomies are shown below in Table 2. The combination of responses allows for sixteen possible individual personality types.

Table 2
The Four Dichotomies of the MBTI

E-Extroversion	Directing energy toward the outer world of people and objects	**I**-Introversion	Directing energy toward the inner world of experiences and ideas
S-Sensing	Focusing on what can be perceived by the senses	**N**-Intuition	Focusing on perceiving patterns and interrelationships
T-Thinking	Basing conclusions on logical analysis with objectivity and detachment	**F**-Feeling	Basing conclusions on personal social values with a focus on harmony
J-Judging	Preferring the decisiveness and closure that results from dealing with the outer world using one judging processes (thinking or feeling)	**P**-Perceiving	Preferring the flexibility that results from dealing with the outer world using one of the perceiving processes (sensing or intuition)

Source: Myers, McCaulley, Quenk & Hammer, 1998

The instrument (through numerous revisions) has been examined within over "4,000 research studies, journal articles, and dissertations…since 1962 (Myers et al, 1998, p. 10). Considerable tests of validity and reliability of the instrument have occurred within many of these studies. However, only a limited number of studies have specifically focused on entrepreneurs. The authors have set out to add to that limited literature in the current research.

As is evidenced by Table 3 below, each preference has a dichotomous element that leans toward previously identified traits of the entrepreneur. While experts in the area of MBTI development stress that it is the collective groupings of these dichotomies that provide full meaning, the individual pairings still provide considerable insight into the individual's characteristics.

Numerous researchers have examined the differences in these individual preferences over the last decade in a wide variety of populations. Some have specifically addressed the difference between small business owners and entrepreneurs, while others have focused on the assumed characteristics of the entrepreneur.

Fasiska (1992) as well as Carland and Carland (1992) determined that entrepreneurs demonstrated a higher E value (preferring to focus their attention on the outer-world versus their inner world) than did managers. The Carland study also supported the direct difference between small business owners and entrepreneurs with the same findings.

Table 3
Dominant Preference Characteristics

Preference	Preference Characteristic
E -I	Outward-directed focus toward new products, emerging markets and opportunities
S-N	Innovative, strategic focus emphasizing future possibilities
T-F	Tough minded, impersonal, non-accommodating approach to decision making
J-P	Unstructured, adaptable, rebellious toward authority, will break the rules, and tends to initiate change

Source: Reynierse, 1997

Several studies have provided support for the conclusion that entrepreneurs (or potential entrepreneurs) demonstrated a preference for collecting information through intuition (N) versus through hard cold facts (S) (Fasiska, 1992; Carland & Carland, 1992; Carland, Carland, Hoy & Boulton, 1988; Ginn & Sexton, 1990; and, Sexton & Bowman, 1985). These results are not surprising given almost all research (whether theoretical or empirical) has recognized the entrepreneur as being innovative (Palmer, 1971), a change-agent (Drucker, 1985), as an individual that through his/her foresight "upsets and disorganizes" (Weber, 1958), or is the means for "creative destruction" (Schumpeter, 1934). Or as Stewart (1996) suggests, the commonality among [entrepreneurs] was the ability to see what was not there, to envision the creation of a new venture" (p xi).

Results of studying the third preference (T-F) have provided mixed signals. As can be seen by referring back to each preference as discussed in table 2, this is probably to be expected. It may very well be that, entrepreneurs (as is probably the case with most business managers) must, at times, base conclusions on facts (Carland & Carland, 1992; Reynierse, 1993; Roach, 1986). In addition, entrepreneurs have often been recognized as individuals with high personal values. Thus, two dilemmas surface--this is probably an area we cannot expect differences with business people in general, and that the entrepreneur may use each preference T or F with equal ease.

The final preference P--J has also received reasonable support in the literature regarding the entrepreneur. Several studies have shown the entrepreneur preferring to deal with the outer-world using P rather than J (Reynierse, 1993; Roach, 1986; Fasiska, 1992, Carland & Carland, 1992, Sexton & Ginn, 1996). It is also reasonable to expect these results--the entrepreneur is expected to exercise considerable adaptability when maneuvering a new venture into the market.

While the above summary of preference for information-related processes is encouraging from a theoretical perspective, it still enjoys only limited empirical support. For the most part, the entrepreneur has been ill defined (as has been the case of most entrepreneur/small business research), and the sample has often been questionable.

The Carland Entrepreneurial Index (CEI)

In 1992, Carland, Carland and Hoy presented a manuscript on empirical validation of a new entrepreneurship scale-the CEI. The authors based this instrument on considerable research in "…entrepreneurial planning, characteristic behavior and distinctions, and [borrowed] heavily from the literature of cognitive psychology." What emerged was an investigative tool that evaluated entrepreneurial drive on a continuum rather than as a dichotomous condition.

Results of this study proved promising. In their study of "conative" constructs, Ruohotie and Koiranen (2000) lauded the value of this instrument. According to these authors, "…the widely known Carland Index nicely aggregates four key elements of entrepreneurship: personality, innovativeness, risk-taking propensity, and strategic posture" (p 11). Validation of the instrument remained, however, a work in progress-that is until recently.

In their recent study (Carland, Carland & Ensley, 2001), these pioneers in the field provided considerable support in terms of reliability, discriminant and convergent validity, as well as some predictive validity. The results indicated, "…personality behavioral elements which have traditionally been associated with entrepreneurship were correlated with the entrepreneurship index at a high level and in the correct direction" (p. 67). The authors downplayed the success of the study and vowed to improve the scale (especially in the area of its predictive qualities).

The authors need to give themselves more credit. It was, indeed, a tremendous success in that through the results we can discriminate between different types of entrepreneurs on a continuum. While many have suspected this (Jackson, Watts & Wright, 1993; Carland & Carland, 1997), an instrument for confirmation is now in place. This marks a new stage in entrepreneurial research, and one that brings us a major step closer to defining the "E" word. Most great researchers (and the same might be said for true entrepreneurs) are never satisfied until total resolution occurs, but in the interim we should be applauding loudly. The research community has an obligation to continue along this path until additional modifications of the instrument are made, thus providing support for the quantum leap in research results that will surely occur.

HYPOTHESES

The current research is based on the implicit assumption that a group of advanced business students will exhibit personality characteristics in common with persons actively engaged in business. More particularly, business students will compare well with other groups of businesspersons in terms of the Myers-Briggs Type Indicator.

Furthermore, prior research suggests certain relationships between the Myers-Briggs Type Indicator (MBTI) results and the score value on the Carland Entrepreneurial Index (CEI). In particular, more "entrepreneurial" persons are expected to show a stronger tendency to E over I. They should also show a greater likelihood for T over F, N over S and for P over J. These statements are based on the discussion offered earlier in conjunction with Table 3. It would be expected that these correlations would be present in the business student population as well. Given those a priori expectations, the following four working hypotheses regarding traits were developed for evaluation in the current research.

H1: Respondents scoring higher on the CEI should exhibit preference for E over I on the MBTI.
H2: Respondents scoring higher on the CEI should exhibit preference for N over S on the MBTI.
H3: Respondents scoring higher on the CEI should exhibit preference for T over F on the MBTI.
H4: Respondents scoring higher on the CEI should exhibit preference for P over J on the MBTI.

A fifth hypotheses was formulated based more generally on the literature. This hypothesis relates to types rather than traits. The hypothesis states that ESTJ and ISTJ types will be more common among more entrepreneurial persons.

H5: Respondents scoring higher on the CEI should prefer ESTJ and ISTJ over other types.

THE SAMPLE

A sample of upper-level undergraduate business students from two, small rural universities completed both the MBTI and the CEI scales. Some 117 useable sets of responses were obtained from the students. The analyses that follow are based on the data obtained from that sample of students. Before turning to the analysis, however, a brief profile of the sample is provided.
The sample was young, as would be expected of undergraduates. Over 62% were between the ages of 19 and 25, and 20.5% were in the 26 to 35 group. The selection of the sample was secondary to the source of the sample elements. The researchers desired to gather data in classes composed of advanced business students. Over 85% of the students were, in fact, seniors and another 12% were juniors. As far as gender is concerned, 53.8% of the students were women and 46.2% were men. The only other major demographic concern in the research was exposure to the small business environment. Three questions were directed at this issue. Only 21% of the students surveyed reported having owned their own businesses. On the other hand, over 50% reported that their parents owned their own small businesses. In addition, over 82% of the students reported they had been (or currently were) employed by a small business at least once. The researchers saw nothing in this data that was surprising or alarming.

Historically, there have been some concerns about using student groups as populations in research. That concern does not apply in the current research because the researchers specifically wanted to know about students. However, that concern is real. For that reason, the researchers decided to "compare" the MBTI profile of the student sample to some other relevant, known group. Reynierse (1997) reports on several samples that might be of interest. One sample, in particular, discussed originally by Carland and Carland (1992) consisted partly of small business owners in a larger study of several populations. While that analysis is beyond the scope of this study, the researchers found no significant differences between the current student sample and the reported sample insofar as any traits on the MBTI are concerned. The analysis used was a standard SSRT Comparison used for such purposes.

DATA ANALYSIS

A note on CEI scoring

The analytical technique selected for the hypotheses specified above, was a simple analysis of proportions. Before beginning the analysis, the authors had to decide on the "degree of granularity" for the Carland Entrepreneurial Index (CEI) scores. The decision to specify two levels of granularity was based on a lack of clear guidance in the literature. The researchers were not able to find any specification of a cut-off point for delineating between high and low levels of CEI. It did not seem appropriate to just choose some score. After some deliberation, the researchers decided to approach the question on the basis of the content of the data. At one level of granularity, the researchers decided to allow a boundary based on cumulative distribution. Because the interest was vested in higher CEI scores (see the hypotheses), the groups came out as follows:

LOW	CEI score of 20 or less
HIGH	CEI score of 21 or higher

In order to consider other approaches to deciding on the High/Low CEI issue, the researchers determined to also use a tercile approach. The decision as to what constitutes a tercile was also based on cumulative frequency. The groups fell out as specified below:

LOW	CEI score of 18 or less
MEDIUM	CEI score of 19 to 22
HIGH	CEI score of 23 or higher

These decision rule results indicate a tight compaction of scores around the score of 20 or 21. Analysis of the data (presented below) for the four stated hypotheses was carried out on the basis of both score category schemes.

The High/Low approach to the data yielded 54 respondents with "Low" scores (20 or less) on the CEI and 63 respondents with "High" scores (21 or more) on the CEI. The other approach High/Medium/Low yielded 36 respondents with "Low" scores (18 or less), 40 with "Medium" scores (19-22) and 41 with "High" scores (22 or above) on the CEI. Having dispensed with the issue of granularity in the analysis, the following tables present the results of the analysis for each of the four hypotheses in turn.

In the following discussion of hypothesis tests, both the 2-group and 3-group CEI groupings are tested. Furthermore, the reader should note that in the data analysis tables, the MBTI anchors are presented in the order specified in the hypotheses, which is not the customary order. Specifically, in Hypothesis 2, the order in the table is reversed from the normal S-N to N in the first data column since the hypothesis predicts N as dominant in the case at hand. Also for the discussion

of Hypothesis 4, the columns are reversed from the customary J-P to present P first in keeping with the prediction in the hypothesis.

Hypothesis 1

Hypothesis 1 predicted that respondents who scored higher on the Carland Entrepreneurial Index (CEI) would be more likely to prefer personality trait E (extraversion) over trait I (introversion). Results were generated using both the 2-group and the 3-group approaches. These results are presented and discussed below.

Using the 2-group (High vs. Low) approach, the following data were obtained:

	E (%)	**I (%)**
Low CEI (< 20)	27 (50%)	27 (50%)
High CEI (>21)	45 (71%)	18 (29%)

At first glance, the data support the hypothesis that High CEI types are more likely to prefer E over I on the MBTI. These results are significant (using the Pearson chi-square test) at the .018 level.

Using the 3-group (High-Medium-Low) approach, the following data were obtained:

	E (%)	**I (%)**
Low CEI (< 18)	14 (39%)	22 (61%)
Medium CEI (=19-22)	26 (65%)	14 (35%)
High CEI (>21)	32 (78%)	9 (22%)

The hypothesis is supported at the .002 level by the Pearson test.

Obviously, the data overwhelmingly support the hypothesis that High CEI score respondents are more likely to demonstrate preference for Extraversion over Introversion on the MBTI.

Hypothesis 2

Hypothesis 2 predicted that respondents who scored higher on the Carland Entrepreneurial Index (CEI) would be more likely to prefer personality trait N (intuition) over trait S (sensing). Using the 2-group (High vs. Low) approach, the following data were obtained:

	N (%)	**S (%)**
Low CEI (< 20)	30 (43%)	40 (57%)
High CEI (>21)	33 (70%)	14 (30%)

Again, the data support the hypothesis that High CEI types are more likely to prefer N over S on the MBTI. These results are significant (using the Pearson chi-square test) at the .004 level.

Using the 3-group (High-Medium-Low) approach, the following data were obtained:

	N (%)	S (%)
Low CEI (< 18)	11 (31%)	25 (69%)
Medium CEI (=19-22)	11 (28%)	29 (73%)
High CEI (>21)	25 (61%)	16 (39%)

The hypothesis is supported at the .003 level by the Pearson test.

Again, the data overwhelmingly support the hypothesis that High CEI score respondents are more likely to demonstrate preference for Intuition over Sensing on the MBTI.

Hypothesis 3

Hypothesis 3 predicted that respondents who scored higher on the Carland Entrepreneurial Index (CEI) would be more likely to prefer personality trait T (thinking) over trait F (feeling). Results were generated using both the 2-group and the 3-group approaches. These results are presented and discussed below.

Using the 2-group (High vs. Low) approach, the following data were obtained:

	T (%)	F (%)
Low CEI (< 20)	26 (48%)	28 (52%)
High CEI (>21)	41 (65%)	22 (35%)

Again, the data support the hypothesis that High CEI types are more likely to prefer T over F on the MBTI. These results are significant (using the Pearson chi-square test) at the .065 level.

Using the 3-group (High-Medium-Low) approach, the following data were obtained:

	T (%)	F (%)
Low CEI (< 18)	14 (39%)	22 (61%)
Medium CEI (=19-22)	27 (68%)	13 (32%)
High CEI (>21)	26 (63%)	15 (37%)

The hypothesis is supported at the .026 level by the Pearson test.

The test results are not as strong as in the test of the first two hypotheses, but are convincing nonetheless. The data definitely support the hypothesis that High CEI score respondents are more likely to demonstrate Thinking over Feeling on the MBTI.

Hypothesis 4

Hypothesis 4 predicted that respondents who scored higher on the Carland Entrepreneurial Index (CEI) would be more likely to prefer personality trait P (perceiving) over trait J (judging). Results were generated using both the 2-group and the 3-group approaches. These results are presented and discussed below.

Using the 2-group (High vs. Low) approach, the following data were obtained:

	P (%)	**J (%)**
Low CEI (< 20)	16 (30%)	38 (70%)
High CEI (>21)	25 (40%)	38 (60%)

In this case, the data do not support the hypothesis that High CEI types are more likely to prefer P over J on the MBTI.

Using the 3-group (High-Medium-Low) approach, the following data were obtained:

	P (%)	**J (%)**
Low CEI (< 18)	13 (36%)	23 (64%)
Medium CEI (=19-22)	15 (38%)	25 (62%)
High CEI (>21)	13 (32%)	28 (68%)

The 3-group granularity in the definition of level of CEI score also failed to support the hypothesis.

The test results clearly argue against the hypothesis that high CEI respondents are more likely to prefer Perceiving over Judging on the MBTI. In this case, in fact, the distribution of selection of Perceiving and Judging are remarkably constant across the two approaches to granularity.

Before proceeding with the final hypothesis, which is really of a different kind, the reader might be interested in some reflections on the bigger picture with respect to the first four hypotheses. Consider the following data on the MBTI traits without regard to CEI score.

Characteristic	**N**
Extraversion	**72**
Intraversion	45

Sensing	70
Intuition	**47**
Thinking	**67**
Feeling	50
Judging	76
Perceiving	**41**

Note that we have highlighted the trait in each pair that is the predicted variable in the first four hypotheses. We will have more to say on this data in the implications section.

Hypothesis 5

Hypothesis 5 predicted that respondents who scored higher on the Carland Entrepreneurial Index (CEI) would prefer personality types ESTJ and ISTJ over other personality types. One important aspect of this hypothesis is that ESTJ and ISTJ are only two of the sixteen types available in MBTI type research. This means there are fourteen other types that could be selected. This compounds selection because there is only a one in eight probability that one of the two specified types would be "uncovered" at random with any given respondent. With fairly small samples, a strong bias against the hypothesis is built in. But, you need a hypothesis to move things forward.

The researchers first looked at simple counts to test this hypothesis. For the 117 students surveyed, the following results ensued. The sixteen types are listed in order of counts from most frequent to least frequent.

Clearly, something related to the hypothesis of interest is going on. The two types predicted to dominate the data for high CEI respondents are the two most frequent for the entire sample. Together they account for 29% of all respondents. On a strictly random basis, they should account for only 12.5%. Of course, MBTI types do not occur in completely equal proportions. Some types are relatively more (and some relatively less) common in the population. It is possible that the preponderance of these two types in the sample would mask the proposition inherent in the hypothesis.

TYPE	N
ESTJ	19
ISTJ	15
ENFP	11
ISFJ	10
ESFJ	10

ENTJ	9
ENFJ	9
ENTP	7
ISTP	5
INTP	5
ESFP	4
INTJ	4
ISFP	4
ESTP	3
INFP	2
INFJ	0

However, the question at hand relates to the sample itself. Are the students in the study who produced higher CEI scores more likely than students in the study who produced lower CEI scores, to prefer ESTJ or ISTJ types on the MBTI? Again, the test of choice is a simple test of proportions. As before, results were generated using both the 2-group CEI and the 3-group CEI approaches. These results are presented and discussed below.

Using the 2-group (High vs. Low) approach, the following data were obtained:

	ESTJ/ISTJ (%)	**Not ESTJ/ISTJ (%)**
Low CEI (< 20)	17 (31%)	37 (69%)
High CEI (>21)	17 (27%)	46 (73%)

In this case, the data do not support the hypothesis that High CEI types are more likely to prefer ESTJ or ISTJ over other MBTI types - at least not at a higher rate than the low CEI respondents. This is obvious in that the Low CEI group actually selected ESTJ/ISTJ at a slightly higher proportion than the High CEI group.

Using the 3-group (High-Medium-Low) approach, the following data were obtained:

	ESTJ/ISTJ (%)	**Not ESTJ/ISTJ (%)**
Low CEI (< 18)	9 (25%)	27 (75%)
Medium CEI (=19-22)	15 (38%)	25 (62%)
High CEI (>21)	10 (24%)	31 (76%)

The finer granularity in the 3-group definition of level of CEI score also failed to support the hypothesis. Interestingly, in this case, the highest proportion was for the medium CEI group, while the low CEI and high CEI groups were almost identical in distribution.

The test results clearly argue against the hypothesis that high CEI respondents are more likely to prefer ESTJ and ISTJ types over all other MBTI types relative to lower CEI respondents.

CONCLUSIONS AND IMPLICATIONS

The researchers set out to consider a simple problem. This problem relates to the correlation between the Myers-Brigg Type Indicator (MBTI) and the Carland Entrepreneurship Index (CEI). The discussion of the background literature related to the MBTI and the CEI led to the specification of five very straightforward hypotheses. Data were collected from 117 undergraduate students using a convenience sampling technique. The student respondents were recruited in senior level business classes. We assumed that the student group would exhibit some tendency toward entrepreneurship greater than the general population. The researchers concede that the sample is fairly small, but the study is exploratory in nature.

Table 3 specifies the predictions to be found in the first four of the five hypotheses. The table and accompanying hypotheses (1-4) predict specific trait preferences based on an analysis of existing literature. Specifically, we predicted that respondents who scored higher on the CEI would prefer one trait over the other on each of the four MBTI dichotomies (E over I, N over S, T over F, and P over J). Three of these four hypotheses were supported by the data collected from the sample. To wit, the data indicated a significant preference for E over I, for N over S and for T over F. The last of the trait related hypotheses was not supported by the data. It is possible that the small sample size used in the study confounded this hypothesis. For the whole sample, 65% (76) of the respondents preferred Judging over Perceiving. For the four dichotomies, this was the strongest split. It may be that the sheer weight of the Judging preference in the sample masked the expected preference.

The fifth hypothesis predicted that ESTJ and ISTJ types would be more common among high CEI respondents. It turned out that STJ's were simply more common. The two types accounted for 29% (34) of the respondents. Even though (or perhaps because of) the overall preference for ESTJ and ISTJ types in the sample, the hypothesis was not supported. We did not find that higher CEI score respondents were more likely to prefer ESTJ or ISTJ over the other fourteen types. Again, the size of the sample might have confounded the analysis.

The first implication to be drawn from the research is obvious. The sample behaved largely as the trait-related hypotheses predicted. The fact that three of the four trait hypotheses was supported lends to the argument that respondents who "score" near the upper end of the CEI do, in fact, tend to prefer specific traits over others on the MBTI trait pairs. Furthermore, the preferences match predictions made from prior research and theory for three of the four trait pairs.

At the same time, the data acquired from the respondents did not support the fourth trait-related hypothesis. While it is possible that the hypothesis related to this trait pair (J-P), is in some way faulty, the researchers are reluctant to say so based on the concern over sample size and

results of previous research. The relationship between the CEI and the Judging/Perceiving dichotomy requires further study. We have already mentioned that a strong majority of the sample (without regard to CEI score) preferred Judging over Perceiving. That being the case, more detailed research needs to be conducted to decide whether we need to rethink the prediction of a preference for Perceiving among more entrepreneurial (as determined by CEI score) individuals. Of course, it may also be that the sample used, and not just its size, was inadequate for a fair test of the hypothesis.

Conversely, the data related to the hypothesis (H2) concerning the S-N pair are very impressive. The sample as a whole clearly preferred Sensing (60%) over Intuition (40%). What the data indicate is that while that strong Sensing preference is evident in the sample, the 40% who preferred Intuition were heavily concentrated among those who scored toward the high end of the CEI. This has to be one of the strongest conclusions in the study.

The last of the five hypotheses predicted that respondents with high CEI scores would prefer ESTJ and ISTJ types over other types. This hypothesis was not supported even though ESTJ and ISTJ were the two most preferred types over all. The lack of support for the hypothesis surprised us. Further analysis and more research need to be directed at the relationship between xSTJ types and CEI scores to uncover the nature of the relationship that might exist, particularly in light of the strong overall preference for xSTJ.

Further development of several of the findings of this research is in order and already underway. The researchers expected to find, and found, that persons with more propensity for self-venturing would prefer Extraversion to Introversion. We also expected to find, and found, that persons of the same high propensity to self-venture would prefer Thinking to Feeling. We expected to find, and found, to a surprisingly high degree that persons with high propensity to self-venture preferred Intuition to Sensing. These findings are completely consistent with general expectations. We did not find that persons with a high propensity to self-venture preferred Perceiving over Judging. In fact, the data demonstrate a very high level of Judging over Perceiving and imply that persons who do prefer Perceiving are diffuse with respect to the CEI.

In terms of research, a larger sample needs to be acquired to determine whether or not sample size confounded the analysis related to the last two hypotheses. Another implication is that a different kind of population might produce results more in keeping with expectations. Another matter for discussion among scholars is the arbitrary method(s) the researchers used to distinguish "levels" of CEI scores. The researchers used a percentile of responses approach. What cut-off levels would be most appropriate? Perhaps a theoretical cut-point based on a normal probability distribution would yield different results.

The researchers feel that the study presented in this paper lends considerable support for the proposition that personality traits, as indicated by MBTI scores, do correlate well with the propensity to self-venture. The study indicates certain areas in which more definitive research efforts are needed and can be used to help specify some of that research. Finally, the study adds another piece to the puzzle about who the entrepreneur is.

REFERENCES

Brodzinski, J. D., Scherer, R. F. & Wiebe, F. A. (1990). Boundary spanning activity: A function of the small business owner's decision style. *Journal of Business & Entrepreneurship, 2*(2), 1-12.

Carland, J. W., Hoy, F., Boulton, W. R. & Carland, J. C. (1984). Differentiating entrepreneurs from small business owners: A conceptualization. *Academy of Management Review, 9*(2), 354-359.

Carland, J. W., Carland, J. C, Hoy, F. & Boulton, W. R. (1988). Distinctions between entrepreneurial and small business ventures. *International Journal of Management, 5,* 98-103.

Carland, J. W. & Carland, J. C. (1991). An empirical investigation into the distinctions between male and female entrepreneurs and managers. *International Journal of Small Business, 9*(3), 62-72.

Carland, J. C. & Carland, J. W. (1992). Managers, small business owners, entrepreneurs: The cognitive dimensions. *Journal of Business & Entrepreneurship, 4* (2), 55-66.

Carland, J. W., Carland, J. C. Stewart, W. H. (1996). Seeing what's not there: The enigma of entrepreneurship. *Journal of Small Business Strategy, 7*(1), 1-20.

Carland, J. W., Jr. & Carland, J. C. (1997). Entrepreneurship: An American dream. *Journal of Business & Entrepreneurship, 9* (1), 33-46.

Carland, J. W., Carland, J. C. & Ensley, M. D. (2001). Hunting the heffalump: The theoretical basis and dimensionality of the Carland Entrepreneurship Index. *Academy of Entrepreneurship Journal, 7*(2), 51-84.

Drucker, P. F. (1985). *Innovation and Entrepreneurship*. New York: Harper Row.

Dugan, K. W., Feeser, H. R. & Plaschka, G. R. (1990). A comparison of personality characteristics among women entrepreneurs, corporate businesswomen and the general female population, In T. W. Garsombke & D. J. Garsombke (Eds.), Conference Proceedings, Orlando, FL: United States Association for Small Business & Entrepreneurship, 88-94.

Fasiska, E. J. (1992). Managerial type determination and its role in the development of a Entrepreneurial Quotient (EQ) instrument. *International Journal of Value-Based Management, 5*, 17-37.

Gartner, W. B. (1988). "Who is the entrepreneur?" is the wrong question. *American Journal of Small Business, 12*(4), 11-32.

Ginn, C. & Sexton, D. L. (1990). A comparison of the personality type dimensions of the 1987 inc. 500 company founder/ceos with those of slower-growth firms. *Journal of Business Venturing, 5*(5), 313-326.

Herron, L. (1992). Cultivating corporate entrepreneurs. *Human Resource Planning, 15*, 3-14.

Jackson, W. T., Watts, L. R. & Wright, P. (1993). Small businesses: An examination of strategic groups. *Journal of Business & Entrepreneurship, 5*(1), 85-96.

Jackson, W. T., Gaulden, C. & Gaster, W. (2001). Who it is and what it does: Finding the "Heffa-Preneur". *Academy of Entrepreneurship Journal, 7*(2), 17-29.

Jackson, W. T. & Gaulden, C. (2001). Life cycle theory: New implications for defining entrepreneurial types in developing countries. *International Journal of Entrepreneurship, 5,* 81-92.

Jung, C. (1923). *Psychological Types*. London: Pantheon books.

McClelland, D. C. (1961). *The Achieving Society.* Princeton: Van Nostrand.

Myers, I. B. & Briggs, K. C. (1962). *The Myers-Briggs Type Indicator*. Princeton: Educational Testing Services.

Myers, I. B. & Myers, P. B. (1980). *Gifts Differing*. Palo Alto, CA: Consulting Psychologists Press.

Myers, I. B., McCaulley, M. H., Quenk, N. L. & Hammer, A. L. (1998). *MBTI Manual: A Guide to the Development and Use of the Myers-Briggs Type Indicator* (3rd Edition). Palo Alto, CA: Consulting Psychologists Press, Inc.

Palmer, M. (1971). The application of psychological testing to entrepreneurial potential. *California Management Review, 8*(3), 32-38.

Pierce, J. L., Kostova, T. & Kirks, K. T. (2001). Toward a theory of psychological ownership in organizations. *Academy of Management Review, 26*(2), 298-310.

Reynierse, J. H. (1993). The distribution and flow of managerial types through organizational levels in business and industry. *Journal of Psychological Type, 25*, 11-23.

Reynierse, J. H. (1997). An MBTI model of entrepreneurism and bureaucracy: The psychological types of business entrepreneurs compared to business managers and executives. *Journal of Psychological Type, 40*, 3-19.

Robinson, R. & Herron, L. (2001). The impact of strategy and industry structure on the link between the entrepreneur and venture performance. *Academy of Entrepreneurship Journal, 7*(2), 31-50.

Ruohotie, P. & Koiranen, (2000). In the pursuit of conative constructs into entrepreneurship education. *Journal of Entrepreneurship Education, 3*, 9-21.

Schumpeter, J. A. (1934). *The Theory of Economic Development,* Cambridge: Harvard University Press.

Stewart, W. H., Jr. (1996). *Psychological Correlates of Entrepreneurship*, New York: Garland Publishing, Inc.

Weber, M. (1958). *The Protestant Ethic and the Spirit of Capitalism*, Translated by Talcott Parsons. New York: Scribner's.

EFFECTS OF PRE START-UP EXPERIENCE ON EARLY PERFORMANCE OF NEW VENTURES

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ABSTRACT

This study is set in Pakistan, where secrecy and lack of documentation pose difficulties for entrepreneurs in assessing opportunities and developing appropriate know-how. It models the effect of pre-start up experience on the initial performance of firms. Seventy-three entrepreneurs in three sectors were drawn from a large urban setting after a pilot study. The effect of entrepreneurial experience, managerial experience, and technical experience in similar and dissimilar industries on initial growth in sales of the start-up was modeled. The effect of family experience, and managerial experience of partners, level of formal education, and management training was also studied. Mixed results of these independent variables are reported for the three sectors owing to their differing social and economic environments. The effect of non-experience variables like entry strategy, entry barriers, and competition also varied across the sectors. As a pioneering study in Pakistan, the work has important implications for stakeholders of the entrepreneurial process.

INTRODUCTION

The usefulness of corporate or business experience before an entrepreneurial start-up has been cited in numerous studies as a factor in the success of entrepreneurial ventures. (Timmons, 2001; Ronstadt, 1982). Some types of experience have been cited as having had a greater impact on new venture performance than others (Dunkelberg, Cooper, Woo & Dennis, 1987) while some studies report mixed results (Cooper, Woo & Dunkelberg, 1989; Reuber & Fischer, 1992; Reuber & Fischer,1993). Thus, it becomes important to establish the link between specific types of experience and new firm performance. Such experience can be specially useful when the environment poses difficulties in learning about business and may convey erroneous signals about the quality of opportunities available.

This study is set in Pakistan, a country where the lack of documentation and support services as well as the difficulty of observing performance poses barriers for potential entrepreneurs in assessing opportunities and acquiring business skills that may be useful in establishing and running new ventures. Such handicaps were cited by several entrepreneurs during the course of fieldwork by one of the authors (Khan, 1996). The environment is marked by high information asymmetries and poor assessment skills with potential entrepreneurs utilising word of mouth or other undependable information as basis for starting new ventures, which are often imitative. Many of the entrepreneurs interviewed by students for a class project as well as entrepreneurs featured as guest speakers cited lack of experience as having been an important factor in a failed venture. They

also stressed the advantage of acquiring experience elsewhere rather than on one's own time and money.

This research aimed to illustrate the importance of different types of pre-start up experience on the success of start-up ventures. Both authors had taught an MBA level Entrepreneurship course where data from over 100 entrepreneur interviews and guest speakers over 10 years suggested a causal link between entrepreneurial success and pre-start up experience. Numerous other factors have also been cited as having affected the success of an entrepreneurial venture. Among these, the role of family advice and exposure to family businesses can be particularly useful, specially in low trust environments where the radius of trust does not extend beyond the immediate family. The level of formal education, and age have also been positively correlated with firm performance (Birley & Noburn, 1987; Hisrich & Brush, 1984). Exposure to formal management concepts may also provide an advantage

The results of such a research study would have strong implications for would be entrepreneurs, educationists, financial institutions, and policy makers. Intending entrepreneurs could plan an entrepreneurial apprenticeship appropriately focusing on which employment opportunities afford greater relevance in acquiring the necessary skills and attitudes. While entrepreneurs cited poor financing support from lending institutions as a major impediment to starting entrepreneurial ventures, bankers cited inability to evaluate the personal characteristics of entrepreneurs as a barrier in supporting them. Management developers and policy makers could design specific programmes and policies aimed at encouraging the acquisition of appropriate experiences for potential entrepreneurs.

For purposes of this research the sample studied was divided into three industry sectors, retail, wholesale, and manufacturing. Essentially, this was done to isolate effects of industry factors, which have been cited as a basis for the diverse findings on effects of pre start-up experience. Box, Watts, and Hisrich (1994) and Box, White, and Barr (1993) have found positive correlations of prior industry experience and new firm performance. Though the paper focused on the effect of pre start-up experience, several other non-experiential factors such as start-up capital, perceived barriers to entry, competition, and entry strategy were also investigated for possible work on a future paper.

LITERATURE ON PRE START-UP LEARNING

Empirical studies attempting to establish a causal link between various types of experience and new venture performance have resulted in mixed findings. Some of this is due to the combined impact on performance of factors other than the owner's experience (Stuart & Abetti, 1990). Another reason is that pre-start up experience has been studied as a single factor and not as being comprised of several types of experience, including entrepreneurial, technical, and managerial experiences.

Several major factors other than experience have also been well studied as influencing new venture performance. Among these were the entrepreneur's personality (Sexton & Bowman, 1986), strategic factors (Sandberg & Hofer,1986), individual factors associated with successful entrepreneurship such as the need for achievement (McClelland, 1961) and Locus of Control (Rotter, 1966). Macro factors such as government and international regulations also affect the performance of new ventures. Stuart and Abetti (1990) have also shown the effect of strategy and organisation

on early firm performance. This led to our recording perceived level of competition, entry barriers, and initial size of firm.

The research used thirteen types of experience factors on the basis of the literature survey. Cooper, Woo, and Dunkelberg (1989) showed positive relationships of performance with managerial, industry, educational, and partner's experience. Chandler and Hanks (1991) operationalised experience into specific types of business and task similarity. They found a positive relationship between business similarity and venture performance, while the relationship between performance and task similarity was negative. Duchesnau and Gartner(1990) found positive relationships with managerial, start-up, and family experiences. Stuart and Abetti (1990) found positive relationships with managerial, entrepreneurial, and start-up experiences. Education has been shown to have had a negative factor in some studies, though clearly, in ventures such as high technology this may not be the case.

The importance of recognising heterogeneity in small businesses while considering the impact of various types of industry experiences has been stressed by Dyke, Fischer, and Reuber (1992). Previous start-up and managerial experiences were shown to have a positive impact upon performance in all five industries they studied. Entrepreneurial experience, acquisition experience, exposure to family business and level of education showed mixed results. Partner's experiences showed positive relationships in some industries while it was negative in others.

RESEARCH METHODOLOGY

The current research was the first quantitative study of its kind in Pakistan. A high level of mistrust of any form of documentation and a poor tradition of academic research restricted the sampling freedom the researchers would have liked. In particular, such constraints make data acquisition very difficult. All the data were collected through personal interviews often facilitated by friends and families of the entrepreneurs because the participants were not willing to disclose information by filling any forms.

A sample of 100 small firms was drawn from the books retail, books wholesale, and light engineering sectors clustered around the city of Lahore (pop; 5 million) after a pilot study. The pilot study of five firms in each industry was conducted to confirm the usefulness of the questionnaire. The questionnaire was modified slightly after the pilot study to improve the clarity in some items. The 100 entrepreneurs were approached but some were disqualified on refusal to share sales figures regardless of accuracy. Several others had inherited the firms from family and had thus not gone through the start-up experience. A few companies were less than one year old. In all seventy-three interview questionnaires were completed and their data analysed.

VARIABLES USED AND MEASURES

The variables used in the study are shown in Table 1. All the eighteen variables shown in Table 1 were assessed using single item questions. Variable 1, the initial growth in sales for the first two years is the dependent variable. Variables 2 through 18 are the independent variables that include the different types of experiences for the entrepreneur, experiences of his partners, role of

family etc. The initial growth of the business was assessed by asking the entrepreneur the sales in the first year and in the second year. On the question regarding entry strategy (ENTSTRATEGY), the interviewees were given three choices; differentiation, innovation, and cost-based. Some of the variables like start-up capital are self-explanatory. Barriers to entry (BARENTRY), and competition (COMPETITION) were recorded as being high, medium, or low as perceived by the entrepreneur. Management experience in a similar industry (MNGTEXP) and management experience in a dissimilar industry (MNGTDIS) were recorded by asking interviewees the length and nature of their experience before the start-up. Simple functional requirements like book keeping or selling were not regarded as being examples of management experience in either similar or dissimilar industries. Management experience was only recognised if the entrepreneur either took or had control over decisions that had a direct impact upon the profit and loss of a business or an operational part of the business.

Table 1
Definitions of the Variables

1.	INIGR SALE	Initial growth in sales obtained by taking the difference in sales in the first and second year of firm's operation.
2.	STCAPITAL	Initial capital.
3.	ENTSTRATEGY	Entry strategy could be innovation, differentiation or cost based.
4.	BARENTRY	Barriers to entry could be high or low.
5.	COMPETITION	Competition could be high or low.
6.	MNGTEXP	Management experience in similar industry.
7.	MNGTDIS	Management experience in dissimilar industry.
8.	TECHEXP	Technical Experience in similar industry.
9.	TECHDIS	Technical Experience in dissimilar industry.
10.	ENTEXP	Entrepreneurial experience in similar industry.
11.	ENTDIS	Entrepreneurial experience in dissimilar industry.
12.	PRVSTART	Number of Previous start-up experiences.
13.	FAMEXP	Exposure to family business.
14.	ADVICE	Advice from family.
15.	MNGTPART	Total management experience of partners.
16.	ENTPART	Total entrepreneurial experience of partners.
17.	EDUCATION	Level of education.
18.	MNGTCRS	Number of management courses attended.

Technical experience in similar industry (TECHEXP) and technical experience in a dissimilar industry (TECHDIS) were both assessed after recognising that technical experience may

both be very specific to an industry, as well as useful if acquired in a dissimilar industry, specially one employing similar generic technical processes. Entrepreneurial experience as in assessing opportunities, preparing formal or informal business plans and strategies, and marshalling resources in launching a new venture were also recorded. As in the case of managerial and technical experiences, the entrepreneurial experiences were also classified as being in a similar industry (ENTEXP) or a dissimilar industry (ENTDIS) as start-up conditions and consequent learning may be dependent upon specific industry conditions.

RESULTS

The mean data for the samples from the three industries, books retail, books wholesale, and light engineering are shown in Table 2. All financials are reported in Pakistan Rupees and given the nature of reporting it is likely that they are lower than the actual figures by a factor of three or four. The nature of products in the engineering sector and the much larger investment compared to the other two sectors explains the larger sales in the first year. The initial growth in sales was the largest in the books wholesale sector; this could also be due to the nature of the wholesale sector where a few players were catering to an explosion in private school starts. As opposed to the wholesale sector, the growth in the retail books sector was lower owing to the proliferation in this sector to cater to larger and more dispersed populations. Growth in the engineering sector was the lowest because of a few large OEM's that were themselves adversely influenced by government policies. The engineering sector however did have the largest sales to capital ratio suggesting a higher utilisation of assets. These results have to be viewed against the backdrop of fraudulent financial reporting where the engineering sector, serving formal sector clients through documented sales would have a much lower error than the other two sectors.

Table 2: Sample Detail Means

	Books Retail	Books Wholesale	Light Engineering Manufacturing
Sample Size	26	23	24
Number of years	13.75	6.08	9.40
Start-up capital	1,430,000	2,470,000	16,650,000
Number of employees	5.75	6.0	9.5
First year sales	560,000	1,760,000	13,080,000
Second year sales	1,050,000	3,826,000	18,685,000
Current sales	2,243,300	7,980,700	57,339,000
Initial sales growth	0.44	0.54	0.30
Overall sales growth	0.24	0.34	0.23
First year sales/Capital	0.40	0.70	0.78

The effects of the non-experience variables, i.e. entry strategy, competition, and entry barriers are shown in Tables 3, 4, and 5. Table 3 shows that while most entrepreneurs in the books retail sector chose a cost based strategy, differentiation yielded the best performance. In the wholesale sector, most entrepreneurs opted for innovations, essentially by innovating the product line. This innovative strategy also resulted in the best performance. The light engineering sector marked by a clear power of the larger buyers over the smaller suppliers as in our sample firms, was noted for most players using a cost based strategy. Some of this may also be due to relative power in the buyer-supplier chain lying with the buyers. The major buyers of light engineering products from the vicinity studied are large automotive OEMs whose volumes and potential length of relationship gives them greater power over the smaller suppliers. Assurance of continued sales in a highly uncertain environment may force suppliers into clearly adopting a cost based strategy.

Table 3: Entry Strategy

	Books Retail		Books Wholesale		Light Engineering Manufacturing	
	No.	Performance	No.	Performance	No.	Performance
Innovation	9	0.47	10	0.81	7	0.22
Differentiation	6	0.66	4	0.67	4	0.25
Cost	11	0.33	9	0.59	13	0.47

Table 4 shows the effects of competitive pressure upon performance, whereby ventures facing high competition at entry did worse than ventures that faced low competition.

Table 4: Competition

	Books Retail		Books Wholesale		Light Engineering Manufacturing	
	No.	Performance	No.	Performance	No.	Performance
High	15	0.34	12	0.45	15	0.30
Low	11	0.62	11	1.01	9	0.66

Table 5 illustrates the effect of entry barriers upon performance. Firms facing higher entry barriers performed better than those facing low entry barriers.

Table 5: Entry Barriers

	Books Retail		Books Wholesale		Light Engineering Manufacturing	
	No.	Performance	No.	Performance	No.	Performance
Innovation	14	0.51	13	0.94	15	0.52
Differentiation	12	0.35	10	0.35	9	0.11

Table 6 profiles the sample in terms of the different experience variables studied. In the books retail ventures, family advice, family business exposure, previous start-up experience, and entrepreneurial experience in a dissimilar industry were the factors experienced by the majority of the sample. In the wholesale sector, family advice, family business exposure, previous start-up experience, entrepreneurial experience in a similar industry and management experience in a dissimilar industry were the most common forms of pre-start-up experiences. In the manufacturing sector, management experience in a similar industry, entrepreneurial experience in a similar industry, management experience of partners and management courses were the most common form of experiences.

Table 6: Entrepreneur Background Experiences

	Books Retail		Books Wholesale		Light Engineering	
	No.	Mean	No.	Mean	No.	Mean
MNGTEXP	5	0.72	7	0.46	12	5.50
MNGTDIS	7	3.20	13	2.50	2	0.35
TECHEXP	0	0.00	0	0.00	0	0
TECHDIS	0	0.00	0	0.00	0	0
ENTEXP	5	0.25	12	6.20	8	3.15
ENTDIS	11	4.00	5	0.45	0	0
PRVSTART	11	0.50	10	0.55	8	0.45
FAMEXP	13	10.15	14	5.90	2	0.85
ADVICE	17	0.50	14	1.01	11	0.45
MNGTPART	6	1.13	5	0.75	14	8.15
ENTPART	6	1.38	4	1.90	2	0.85
MNGTCRS	2	0.13	0	0.00	6	0.55

Table 7 illustrates the fact that in the retail and wholesale sectors, those who took family advice performed better than those who did not. In he light engineering sector, less than half the sample took family advice, and their performance was only slightly better than the majority who did not have access to such advice.

Table 7: Family Advice

	Retail		Wholesale		Manufacturing	
	No.	Performance	No.	Performance	No.	Performance
YES	14	0.50	12	1.01	9	0.45
NO	12	0.36	11	0.36	15	0.38

Table 8 shows the correlation co-efficients of the experience variables and their significance levels for each industry. In the books retail sector, four experience variables were significantly related to initial firm performance. Of these, entrepreneurial experience in a dissimilar industry, previous start-up experience, and family advice were positively related while education was negatively related. In the books wholesale sector, management experience in a dissimilar industry, entrepreneurial experience in a similar industry, previous start-up experience, and exposure to family business were positively and significantly related to firm performance. In the light engineering sector, management experience in a similar industry, management experience of partners, and attendance at management courses were positively related to initial firm performance.

Table 8: Relationship between Types of Experiences and Performance

	Books Retail			Books Wholesale			Light Engineering Manufacturing		
	INIGRSALE		PROB>F	INIGRSALE		PROB>F	INIGRSALE		PROB>F
MNGTEXP		–			–		0.15		0.02
MNGTDIS		--		0.08		0.012		--	
ENTEXP		--		0.19		0.005		--	
ENTDIS	0.17		0.03		--			--	
PRVSTART	0.18		0.08	0.15		0.05		--	
FAMEXP		--		0.15		0.001		--	
ADVICE	0.25		0.05		--			--	
MNGTPART		--			--		0.11		0.008
ENTPART		--			--			--	
EDUCATION	-0.15		0.09		--		0.05		0.05
MNGTCRS		--			--		0.06		0.03
PROB>F			0.1252			0.0005			0.0472

DISCUSSION

The results of this study must be viewed against the backdrop of the entrepreneurial environment in Pakistan. Pakistan, a country with an estimated population of 140 million in 2000 is classified as a developing country with a per capita income of approximately $450 per annum. The country is heavily indebted to both domestic and foreign lenders and suffers a growing trade deficit and a declining currency value. The vast majority of industrial and commercial enterprises can be classified as small and medium, employing between 10 and 500 people. The larger industrial and commercial, specially, financial ventures belong to the government or were started in periods of preferential access to capital and other resources. Larger industrial enterprises would most closely resemble Baumol's (1987) unproductive entrepreneurship model, governed by the rules of the game

that fosters such entrepreneurship. Smaller enterprises, unprotected by preferential tariffs and resource access, thus become a noteworthy engine of productive entrepreneurial activity and worthy of study. Apart from government regulation and financial control, smaller enterprises also benefit and suffer from government initiatives and policy that creates both market opportunities and barriers to productive entrepreneurship.

Apart from economic factors, social features present an important dimension of the entrepreneurial environment. Pakistan, dominated by the overwhelming presence of family enterprises would be classified as a low trust society (Fukuyama, 1995), where people find it hard to form bonds outside the immediate family. Apart from its implications for the nature of business firms, where large corporate organisations based on the separation of ownership and control would be difficult to develop, such a social arrangement creates significant information asymmetries and a penchant for concealing information. Potential entrepreneurs are affected in many ways, but most important is the issue of access to essential start-up information such as market viability, customer purchase patterns, operating costs, and a host of other operating and regulatory features that affect the economic performance of start-ups. The impact of using quantitative data for research such as this has already been mentioned earlier.

The combination of economic and social factors briefly discussed above impact the three sectors chosen for this study and the results are thus subject to both systemic and unsystematic influences upon the three sectors. Of these, the social factors would tend to be more systemic while the economic factors may affect the sectors differently. This study found that initial firm performance was affected significantly by a number of variables. The significance levels and co-efficients of these variables were however different across the three industries studied. The effects of the thirteen experience related variables is discussed below. The non-experience variables will be studied in another paper.

In the light engineering sector, management experience in a similar industry was positively and significantly related to firm performance. In the retail and wholesale sectors, the relationship was not significant. The importance of management experience for the light engineering sector can be explained by the complexity of operations compared to retail and wholesale book industries. Manufacturing in Pakistan would interact with a variety of both formal and informal sector suppliers, workers, and customers imposing some managerial challenges in an unstructured environment. Managerial skill such as contingency planning and dealing with multitude of different sources of funds and information would be essential for successful operations. The environmental uncertainty in the light engineering sector, many of whom were vendors for OEMs affected by a host of government policies was also greater. Similar industry experience was also important both to counter the effects of information asymmetries as well as for the repetitive nature of the technical tasks (Trow, 1970; Ellis, 1965).

Management experience in a dissimilar industry was positively and significantly related to performance in the books wholesale sector and not significantly related in the books retail and light engineering sectors. Twenty-two entrepreneurs from all sectors had dissimilar industry management experiences. Retail sector was not affected by management experience in either similar or dissimilar industries owing to the simplicity of the business operations. The operations that mainly involve

sourcing from a limited and regular supply base and selling clearly pose fewer managerial challenges than the example of light engineering.

For the retail sector, entrepreneurial experience and previous start-up experience was significantly and positively related to initial firm performance. Entrepreneurial experience in a similar industry and previous start-up experience was also important for initial firm performance in the wholesale sector. The factor was not important in the light engineering sector where the operational complexity imposes a greater need for managerial experience. The larger start-up capital would also suggest that failure in previous ventures makes another engineering start-up considerably more difficult than it would for the other two sectors. Many of the engineering firms sampled were suppliers to the large OEMs and had, through government policy, some assurance of being able to sell their product as long as deliveries were made to the OEMS under acceptable quality and reliability standards.

Family experience was significant in the books wholesale sector and family advice was significant in the retail sector illustrating both the closed, tightly knit family structure of these two industries as well as the tendency to do locality spin-offs in these sectors. The manufacturing sector, with its requisite entry barrier of technical capability was not influenced by these social capital variables. Our light engineering sample was marked by the entry of new entrepreneurs whose families typically had no business background.

Management experience of partners was also significant for the manufacturing sector both in terms of helping acquire business through contacts in the engineering network as well as in sharing other roles in running the ventures. In the social structures of Pakistan, a variety of networks, both social and family based, as well as others, such as school or craft based are important resources and partners are often chosen on the strength of their networks (Khan, 1996). For the light engineering sector, the nature of education (primarily technical college) and management courses were also significantly related to the performance of ventures. Education was negatively related to venture performance in the retail sector emphasising the importance of entrepreneurial and previous start-up experience over the level of education.

The industry dynamics within the social and economic context of new venture initiation and performance suggest the importance of different types of experience. In the very small and fragmented retail environment, entrepreneurial experience and family influence were important variables. The low trust outside family and lack of easily enforceable laws created an environment for family members to be hired for managing small retail ventures. Any attempts at hiring outside employees, specially, where undocumented purchasing, cash or inventory was handled resulted in theft and pilferage. A limited understanding of internal control procedures as well as paucity of resources for implementing such systems resulted in a preference for family members to be used for such tasks. In the wholesale sector, family and entrepreneurial experience continued to be important given the closed nature of the sector and the lack of documented information. However, accessing a different and more spread out supplier base as well as the need to transact with foreign suppliers through a variety of communication channels involved management skills that may have been acquired in a different sector. Such skills as dealing with banks for letters of credit or with shipping agents and government departments such as customs would clearly be non-industry specific and thus useful in the context of another sector, such as wholesale. The engineering sector represents a

quantum leap of complexity over the other two sectors and thus the management experience of the entrepreneur as well as the partners becomes important in managing various parts of the value chain effectively.

IMPLICATIONS

Entrepreneurial activity affords the opportunity for untested entry, but often results in business failure. At lower entry costs such as those found in the sectors studied in this research it may also encourage considerable heterogeneity in the players who choose to enter such businesses. Regardless of the ease of entry, the start-up of an entrepreneurial venture involves or influences many stakeholders. Among these are the prospective or existing entrepreneurs, support institutions such as financers and human developers, and policy makers, specially in developing countries. In particular, a secretive and closed environment poses many challenges for successful entrepreneurship. This research leads to several implications for entrepreneurship development in such environments.

Potential entrepreneurs can benefit by an explicit recognition of the factors deemed useful for successfully launching new businesses keeping sector specific concerns in mind. Entrepreneurs could assess their readiness for successful start-up by comparing their skills with the factors identified as influencing early performance of firms. They could also identify specific industries to enter in light of their experiences. Entrepreneurs can also identify resources, such as partners, they need to acquire to increase the chances of success in specific industries.

Policy designers and support institutions could target support aimed at enhancing the potential or existing entrepreneurs' abilities. In some countries where public funds are used to support small new enterprises, the factors identified in this research could be explicitly included in criteria to evaluate support capital.

Many management development institutions, which utilise entrepreneurship development concepts and material can design programs and support material to enhance the specific factors identified in this research. In particular, the design of entrepreneurship development programs in low trust environments can be improved by focusing on the specific factors identified here. Since entrepreneurship involves a broad range of factors and activities, entrepreneurship developers can focus on the specific skills that can be enhanced through development programs and those that can best be acquired through experience.

REFERENCES

Baumol W. (1996) Entrepreneurship: productive, unproductive and destructive, *Journal of Business Venturing, 11*(1), 3-22.

Birley, S. & Noburn D. (1987). Owners and managers: The venture 100 vs the fortune 500, *Journal of Business Venturing, 2,* 351-363.

Box T.M., Watts L. R. & Hisrich, R. D. (1994). Manufacturing entrepreneurs: An empirical study of the correlates of employment growth in the Tulsa MSA and rural East Texas. *Journal of Business Venturing, 9*(3), 261-270.

Box, T. M, White, M.A. & Barr, S. H. (1993). A contingency model of new manufacturing firm performance, *Entrepreneurship: Theory and Practice, 18*(2), 31-46.

Calvin, K., Don, S., Philip, M.V. & Dean, Y. (1982). Managers and entrepreneurs: Do lifetime experiences matter? *Frontiers of Entrepreneurship Research,* 516-525.

Cooper, A. C., Woo C. Y.,& Dunkelberg, W. C. (1989). Entrepreneurship and the initial size of firms. *Journal of Business Venturing, 4*, 317-332.

Duchesneau, D. A. & Gartner, W. B. (1990). A profile of new venture success and failure emerging industry. *Journal of Business Venturing, 5*(5), 297-312.

Dunkelberg, W. C., Cooper, A. C., Woo C. Y. & Denis W. D. (1987). New firm growth and performance. *Frontiers of Entrepreneurship Research,* 307-321.

Dyke, L. S., Fischer, E. M. & Reuber, A. R. (1992). An inter-industry examination of the impact of owner experience on firm performance. *Journal of Small Business Management, 30*(4).

Ellis, H. (1965) *The Transfer of Learning.* New York: MacMillan.

Fukuyama, F. (1995): *Trust: The Social Virtues and the Creation of Prosperity*. New York: Free Press.

Gaylen C. & Steven, H. (1991). How important is experience in a highly similar field. *Frontiers of Entrepreneurship Research*, 1-10.

Hisrich, R. D. & Brush, C.G. (1984). The women entrepreneurs: Management skills and business problems, *Journal of Small Business Management*. 30-37.

Khan, W. M (1996). Characteristics of Pakistan Entrepreneurs. Presented at the LUMS-McGill International Conference on Management and Business, Lahore, Pakistan

McClelland, D.C. (1961). *The Achieving Society,* New York: Free Press.

Reuber, A. R. & Fischer, E. M. (1993). The learning experiences of entrepreneurs. *Frontiers of Entrepreneurship Research,* 234-245.

Reuber, A. R. & Fischer, E. M. (1992). Does entrepreneurial experience matter? *Journal of Small Business and Entrepreneurship, 9*(2), 2-13.

Robert, R. (1982). Does Entrepreneurial career path really matter? *Frontiers of Entrepreneurship Research*, 540-567.

Rotter, J. B (1996) Generalized expectations for internal issues external control of enforcement. *Psychological Monographs, 80*(1), 1-28.

Sandberg, W .R. & Hofer, C. W. (1986). The effects of strategy and industry structure on new venture performance. *Frontiers of Entrepreneurship Research*, 244-266.

Sexton, D .L. & Bowman, N .B. (1986). Validation of a personality index. *Frontiers of Entrepreneurship Research,* 40-51.

Stuart, R. W. & Abetti, P. A. (1990). Impact of entrepreneurial and management experience on early performance. *Journal of Business Venturing, 5*(3), 151-162.

Timmons, J. (2001). *New Venture Creation* (Fifth Edition), New York: Irwin-McGraw Hill.

Trow, W.C. (1970). The problem of transfer ---then and now. *Contemporary Issues in Educational Psychology*, 51-72.

Questionnaire
Name_____
Age_____
Gender_____
Business name_____
What was the level of Annual Growth at the start of the venture (between the first year and the second year of sales)?
What was the initial capital used at the start of the business?
How would you describe the strategy used by you at the start of the business? Differentiation___ Innovation___ Cost-based____
How would you rate the barriers to entry in your industry when you started the business? High____ Medium___ Low___
How would you rate the level of competition in your industry at the time you started the business? High____ Medium____ Low___
How many years of management experience in the same industry did you have at the start-up of your business?
How many years of management experience did you have in a different industry at the start of your business?
How many years of technical experience did you have in the same industry at the start of your business?
How many years of technical experience did you have in a different industry at the time you started your business?
How many years of entrepreneurial experience did you have in the same industry at the time you started your business?
How many years of entrepreneurial experience did you have in a different industry when you started your business?
How many previous start-up attempts had you made before the start-up of your business?
How many years of experience did you have in your family business before the start-up of your business?
How would you rate the quality of advice from your family in the formation of your business? High___ Medium___ Low__
How many total years of management experience did all your partners have prior to the start-up of your business?
How many years of entrepreneurial experience did all your partners have prior to the start-up of your business?
How many years of education did you have prior to the start-up of your business? Less than 10 years___ 10-12 years_____ 12-14 years_____ More than 14 years___
How any days of short management courses had you attended before the start-up of your business?

BUSINESS START AND TERMINATION RATES: AN EXAMINATION OF RURAL AND NON-RURAL AREAS

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ABSTRACT

Rural areas are often considered economically disadvantaged (Chrisman, Gatewood & Donlevy, 2002; Fendley & Christenson, 1989; Kale, 1989; Lin, Buss & Popovich, 1990; Mueller, 1988; Osborne, 1987; Small Business Administration [SBA], 2001; Tigges & Green, 1994; Trucker & Lockhart, 1989). However, a few studies (Robinson, 2001; Sullivan, Scannell, Wang & Halbrendt, 2000; Tosterod & Habbershon, 1992) have shown that some rural business owners view their nonmetropolitan locations as a positive or neutral factor in business start-up and success. This study delves further into the issue of the affect of rural location on businesses by comparing the rate of business starts and terminations in rural and non-rural Ohio counties. It also examines the proportion of total businesses with employees.

INTRODUCTION

Ohio is a state of small towns and sprawling cities. It is home to more than 11 million people, of whom approximately 5.7 million were in the labor force in 1998 (Ohio Department of Development, 2000). Although 49 of Ohio's 88 counties are designated as nonmetropolitan, three times as many people live in urban counties as in rural counties. (US Census Bureau, 2001). The following section reviews the factors that promote or discourage entrepreneurship in rural areas, leading to the study's hypotheses. Results of statistical tests on the data are then presented and analyzed. As will be discussed in the methodology section, the terms "rural" and "nonmetropolitan" are not technically synonymous under the specific definitions created by the US Census Bureau (2002), but in this study, these terms will be used interchangeably.

FACTORS INFLUENCING RURAL BUSINESSES

A number of factors work against rural areas in terms of economic development and encouragement of entrepreneurship. Nonmetropolitan areas naturally have smaller populations. Economic studies have shown rural residents have not only less aggregate buying power, but also lower individual buying power. Per capita income has been greater in metropolitan than nonmetropolitan areas since 1979 (Barkley, 1993; Kean, Gaskill, Letstritz & Jasper, 1998).

Location may influence business starts and success in that geographic region is a determinant of the availability of needed resources (Chrisman et al., 1992). Rural areas often offer fewer support

services and less-developed transportation and electronic infrastructures (Freshwater, 1998; Mueller, 1988; SBA, 2001). This could especially hinder nonmetropolitan businesses of the information age because the cost and quality of telecommunications are becoming increasingly important to businesses (Corman, Lussier & Nolan, 1996).

Essential business services such as accounting, banking, advertising, and legal services may be both difficult to find and more expensive in rural areas (Osborne, 1987; Trucker & Lockhart, 1989; Fendley & Christenson, 1989; SBA, 2001). The SBA recently reported that the trend toward the merger of small banks with larger ones less willing to makes loans to small businesses makes it more difficult for small rural businesses to gain financing (SBA, 2001). Overall, the SBA (1999) reports that between 1990 and 1995, all industries did better in non-rural than in rural areas.

In contrast, some studies examining rural and non-rural businesses have found that rural businesses do not necessarily lag behind their metropolitan counterparts in terms of venture creation. Taking population into consideration, Clark and James (1992) found the rate of business ownership to be higher in nonmetropolitan areas with low populations. Similarly, Lin and associates (1990) found no significant differences between rural and urban areas when comparing the rates at which new firms and jobs were created.

Studying new business owners in South Dakota, Tosterud and Habbershon (1992) found that the majority of these people had started their businesses in order remain in their chosen location, which, in most cases, was less than 30 miles from where they had spent their entire lives. These business owners believed their chances of success were as great there as in any other location. A similar study in Iowa showed that rural business owners, 62% of whom were Iowa natives, viewed their location as advantageous (Tosterud & Habberson, 1992).

Similarly, a study involving a small group of women micro-business owners in Pennsylvania found that the women did not view their location as a disadvantage (Robinson, 2001). On the contrary, they enjoyed lower costs, established social networks, and a decreased sense of risk that encouraged them to start businesses. Social networks were also found to have a positive influence on business start-ups in the rural area investigated by Sullivan and associates (2000) as the people in that study believed mutual support created a synergistic effect.

It is unclear from the literature whether the advantages outweigh disadvantages to starting and owning a business in a rural area, thus promoting entrepreneurship, or if the opposite is true. Clearly, some rural business owners view their locations as advantages rather than disadvantages despite problems associated with nonmetroplitan areas (Robinson, 2001; Sullivan et al., 2000; Tosterud & Habbershon, 1992). If rural residents view their location as providing lower risk of failure (Robinson, 2001) or start their own businesses to provide employment for themselves when suitable jobs are not available so they may remain in a rural area (Tosterud & Habbershon, 1992), there may be a higher rate of business starts in nonmetropolitan areas.

However, if the economic problems of starting and succeeding in a rural business outweigh the benefits, business starts may be lower and business terminations may be higher in nonmetropolitan counties. It is important to determine if there are differences in the rates of business starts and terminations in order to add to what is known about the influence of environment on entrepreneurship, examine the need for aid to businesses in rural or non-rural areas, and provide lenders and investors important information.

METHODOLOGY, DEFINITIONS AND LIMITATIONS

Data regarding business starts and terminations and total active businesses were collected from the 1999 Ohio County Profiles (Ohio Department of Development, 2000), as were the metropolitan or nonmetroplitan classification for each county. As stated previously, for the purposes of this project, rural and nonmetropolitan are used synonymously as are non-rural and metropolitan. However, there are technical differences. The US Census Bureau (2002) defines a metropolitan area as one that has a minimum population of 50,000 or is defined by the Census Bureau as an urbanized area with at least 100,000 residents. All other areas are classified as nonmetropolitan. Because metropolitan areas include surrounding counties with close social and economic ties to a central metropolitan county, counties with relatively lower population densities may be designated as metropolitan if they are near metropolitan centers. Urban areas are defined as Census Bureau-classified urbanized areas and those with 2,500 or more people outside urbanized areas. Territory not classified as urban is considered rural. Given these definitions, both metropolitan and non-metropolitan areas generally include areas that are rural and urban (US Census Bureau, 2002). Under this system, 49 counties were classified as nonmetropolitan while 39 were designated at metropolitan.

Business terminations would appear to be a straight-forward variable for analysis, but in reality, the measurement of this variable is less than simple. The lack of a reliable measure for determining business failure is a significant problem in understanding and preventing small business failure (Cochran, 1981). A measure of business failure should be objective, in order for results to be replicated, relevant, reliable, and simple (Watson & Everett, 1993). However, according to Watson and Everett, there may not be a single measure that has all these attributes while meeting the needs of all users.

This study used a definition that was far from ideal, but useful for the given purpose. The data on business starts, terminations and total active businesses were obtained from the Ohio Department of Development (2000). These numbers were based on enrollment in the Ohio Workers Compensation Act during the year indicated. Therefore, the number of business starts and terminations represent the number of businesses that began or canceled insurance coverage under this state system. All businesses, including self-employed people without other employees, may join the system. There are three major limitations to this use of data including 1) businesses may continue in operation without insurance, 2) sales and transfers of businesses may be counted in both starts and terminations and 3) informal businesses or self-employed small business owners who opt out of the program are not counted. Due to a change in database categories and files, data from years previous to 1997 are not fully comparable with more recent years, although comparisons within years are appropriate.

Business start rates were calculated by dividing the number of business starts in a given year by the total number of businesses in the Ohio Workers Compensation program that year. Business termination rates were calculated in similar fashion. These rates made it possible to make a fair comparison between metropolitan areas, which had many more total businesses, business starts, and terminations, and nonmetropolitan areas.

Data on the number of total businesses in existence, and the number of businesses with employees were obtained from the US Census Bureau's 1997 Economic Census (2001). Statistical analysis was performed using SPSS to calculate mean start and terminations rates and the Mann-Whitney U test of difference between these rates. T-tests were performed on US Census Bureau's Economic Census (2001) data regarding the proportion of metropolitan and nonmetropolitan businesses with employees, and the comparison between the total businesses in the Ohio Workers Compensation program and total businesses counted by the Economic Census.

RESULTS AND ANALYSIS

The mean start and terminations rates for nonmetropolitan and metropolitan Ohio counties are shown in Table 1.

Table 1
Business start and termination rates in Ohio counties

	1993	1994	1995	1996	1997	1998
Mean Rate of Business Starts						
-Nonmetropolitan Counties	11.1%	10.9%	10.3%	10.7%	10.2%	9.9%
-Metropolitan Counties	12.7%	13.0%	12.7%	11.6%	11.6%	11.6%
Z Score	-3.32	-3.81	-4.04	-1.95	-2.33	-3.16
Significance	.001	.000	.000	.051	.020	.002
Mean Rate of Business Terminations						
-Nonmetropolitan Counties	9.9%	10.0%	9.4%	8.7%	11.3%	9.9%
-Metropolitan Counties	10.7%	10.6%	10.4%	9.2%	11.9%	10.7%
Z Score	-2.38	-1.44	-2.58	-1.47	-1.36	-1.77
Significance	.017	.150	.010	.140	.175	.077
Calculated from Ohio County Profiles (Ohio Department of Development, 2000)						

Analysis of the data shows significant differences between the business start rates in metropolitan and nonmetropolitan counties in every year except 1996. The difference that year is very close to statistical significance. In each of the years, nonmetropolitan counties lagged behind their metropolitan counterparts. This suggests rural residents were less likely to start businesses, or, more specifically, less likely to begin coverage under the Ohio Workers Compensation Act.

Termination rates, however, show a different story. Nonmetropolitan counties show lower termination rates every year, with significantly lower rates in 1993 and 1995. Although rural

residents may be less likely to start businesses, once started, they are less likely to go out of business and/or terminate coverage under the Ohio Workers Compensation Act.

Due to the definition of business starts and terminations, these differences may reflect a lower propensity for obtaining coverage under the Ohio Workers Compensation Act. One possible reason for this may be a lower percentage of businesses without employees, and therefore a lower need for this coverage, even though self-employed people without employees are also allowed to enter the program. To examine this possibility, the total number of businesses that were enrolled in the Ohio Workers Compensation program during 1997 was compared to US Census Bureau (2001) data on the number of businesses in metropolitan and nonmetropolitan counties during that year.

As shown in Table 2, the US Census Bureau (2001) data show three to four times as many businesses in existence as do the Ohio County Profiles (Ohio Department of Development, 2000) data. Comparing these numbers, it appears that 29.7% of businesses in Ohio's nonmetropolitan counties and 26.5% of businesses in metropolitan counties subscribe to the Ohio Workers Compensation program. Statistical analysis shows these proportions to be significantly different ($t = 3.27$) at the .002 level, with a higher proportion of rural businesses involved in the program.

Table 2
Comparison of numbers of businesses and employers in 1997

Number of businesses	US Census Bureau	Ohio Workers Compensation program
-Nonmetropolitan Counties	147,388	42,969 (29.7% of Census figure)
-Metropolitan Counties	654,379	176,626 (26.5% of Census figure)
$t = 3.27$ $p<.002$		
Number of businesses with employees		
-Nonmetropolitan Counties	39,222 (26.1% of total businesses)	
-Metropolitan	654,379 (26.8% of total businesses)	
$t = -.94$		
From Ohio County Profiles (Ohio Department of Development, 2000) and US Census Bureau (2001)		

These figures are very close to the proportions of businesses with employees, with 26.1% of nonmetropolitan and 26.8% of metropolitan companies employing at least one worker. Statistical analysis of the proportions of total businesses with employees shows no significant difference ($t = -.94$) between rural and non-rural counties. Although there are much fewer businesses in nonmetropolitan counties (39,222 versus 654,379), they are as likely as those in metropolitan counties to have employees. Therefore, it seems likely, as well as logical, that those businesses that join the Ohio Workers Compensation program are primarily employers. Rural non-employers, however, may be more likely to join the system as the difference between the percentage of rural companies with employees and the proportion of total businesses (Ohio Department of

Development) to total businesses (US Census Bureau) is 3.6% compared to -0.3% with non-rural businesses.

CONCLUSIONS

The data presented here show that nonmetropolitan Ohio counties had significantly lower rates of business starts from 1993 to 1998, suggesting that rural residents were less likely to begin businesses that enrolled in the Ohio Workers Compensation program. The proportion of total businesses as counted by the US Census Bureau (2001) that enroll in this system is very similar to the proportion of total business (US Census Bureau) that have employees. However, it would also appear that slightly more rural non-employers may have joined the program. Future research should examine this more closely to determine if rural business owners, even those without employees, are more likely to join the program. This could be a factor in explaining why rural counties have lower business start rates, but similar or even lower termination rates.

Given the various reasons that potential rural business owners may be less likely to start operations, such as lower levels of economic development, less access to business services and capital, and higher costs, it is not surprising that there tend to be fewer starts in rural areas. However, the similar or lower rates of business terminations suggest that once businesses in these areas are started, they are no more likely to fail. In some years, rural businesses were less likely to terminate. Determining the specific reasons for this finding was beyond the scope of this project. It can be speculated that the reasons people start businesses in rural areas may be related to the reasons business owners stay in operation. For example, if people start businesses in order to remain in a given location, as in the study by Tosterud and Habbershon (1992), it seems likely that they would continue their enterprises as long as possible to achieve their overall goal, even if this means more difficulty. They may be willing to settle for a lower level of economic success if other objectives are being met (Kuratko, Hornsby & Naffziger, 1997).

Similarly, if the lower costs, established social networks, and decreased sense of risk experienced by the women in Robinson's (2001) study encouraged them to start businesses, these factors may also play a part in the continued operation of these businesses. Future research should further study this issue by examining the reasons for lower, or at least not higher, termination rates by nonmetropolitan businesses. If there is lower risk of business failure in rural areas, lenders may find that these business owners are a better financial risk than those in more developed areas.

REFERENCES

Barkley, D. L. (1993). *Economic adaptation: Alternatives for non-metropolitan areas*. Boulder, CO: Westview Press.

Bruno, A. V. & Tyebjee, T. T. (1982). The environment for entrepreneurship. In C. A. Kent, D. L. Secton, & K. H. Vesper (Eds.), *Encyclopedia of Entrepreneurship,* pp. 288-315, Englewood Cliffs, NJ: Prentics-Hall.

Chrisman, J. J., Gatewood, E. & Donlevy, L. B. (2002). A note on the efficiency and effectiveness of outsider assistance programs in rural versus non-rural states. *Entrepreneurship: Theory and Practice, 26*(3), 67-80.

Chrisman, J.J., Van Deusen, C. & Anyomi, S. M. K. (1992). Population growth and regional economy: An empirical analysis of business formation and job generation in the retail sector. *Entrepreneurship and Regional Development, 4*, 339-355.

Clark, T. & James, F.J. (1992). Women-owned businesses: Dimensions and policy issues. *Economic Development Quarterly, 6*(1), 25-40.

Cochran, A. B. (1981). Small business mortality rates: A review of the literature. *Journal of Small Business Management, 19*(4), 50-59.

Corman, J., Lussier, R. N. & Nolan, K. G. (1996). Factors that encourage entrepreneurial start-ups and existing firm expansion: A longitudinal study comparing recession and expansion periods. *Academy of Entrepreneurship Journal, 1*(2).

Fendley, K. & Christenson, J. A. (1989). Rural reflation: An idea for community development. *Journal of the community development society, 20*(1), 103-115.

Freshwater, D. (1998). Rural America's information age: The economic future of rural communities depends on their ability to take advantage of emerging telecommunications technologies. *Forum for Applied Research and Public Policy, 13*(4), 72-78.

Kale, S. (1989). Theoretical contributions to the understanding of U.S. Nonmetropolitan Economic Change. *Economic Development Quarterly, 3,* 58-69.

Kean, R., Gaskill, L., Leistritz, L. & Jasper, C. (1998). Effects of community characteristics, business environment, and competitive strategies on rural retail business performance. *Journal of Small Business Management, 36*(2), 45-57.

Kuratko, D.F., Hornsby, J.S. & Naffziger, D.W. (1997). An examination of owner's goal in sustaining entrepreneurship. *Journal of Small Business Management, 35*(1). Retrieved from ProQuest.

Lin, X, Buss, T.F. & Popovich, M. (1990). Entrepreneurship is alive and well in rural America: A four-state study. *Economic Development Quarterly, 4*(3), 254-259.

Mueller, W. (1988). Beyond blue highways. *Venture, 10*(8), 40-44.

Ohio Department of Development. (2000). *Ohio county profiles, 1999*. Congressional Information Service, Inc.

Osborne, D. (1987). Bootstrap banking. *Inc., 9*(9 - August), 69-72.

Robinson, S. (2001). An examination of entrepreneurial motives and their influence on the way rural women small business owners manage their employees. *Journal of Developmental Entrepreneurship*.

Small Business Administration. (2001). *Advancing rural America.* Washington, D.C.: Office of Advocacy.

Small Business Administration. (1999). *Rural and urban areas by firm size, 1990-1995*. Washington, D.C.: Office of Advocacy.

Sullivan, P., Scannell, E., Wang, Q. & Halbrendt, C. (2000). Small entrepreneurial business: A potential solution to female poverty in rural America. Http:www.sbaer.uca/edu/Docs/ProceedingsII/97ICS257.TXT 2000, October 23.

Tigges, L. M. & Green, G. P. (1994). Small business success among men- and women-owned firms in rural areas. *Rural Sociology, 59*, 289-309.

Trucker, S. W. & Lockhart, C. D. (1989). Maryland small business development financing authority's equity participation investment program. *Economic Development review, 7*(2), 60-61.

Tosterud, R. J. & Habbershon, G. (1992). Rural entrepreneurship: A preliminary study. *South Dakota Business Review,* March. Retrieved from ProQuest.

US Census Bureau (2001). *1997 Economic Census*. Retrieved August 14, 2002, from www.census.gov/epcd/mwb97/oh/OH001.html

US Census Bureau (2002). *Census 2000 urban and rural classification.* Retrieved August 14, 2002, from http://www.census.gov/geo/www.ua/ua_2k.html.

CREATING A 21st CENTURY ENTREPRENEURIAL ORGANIZATION

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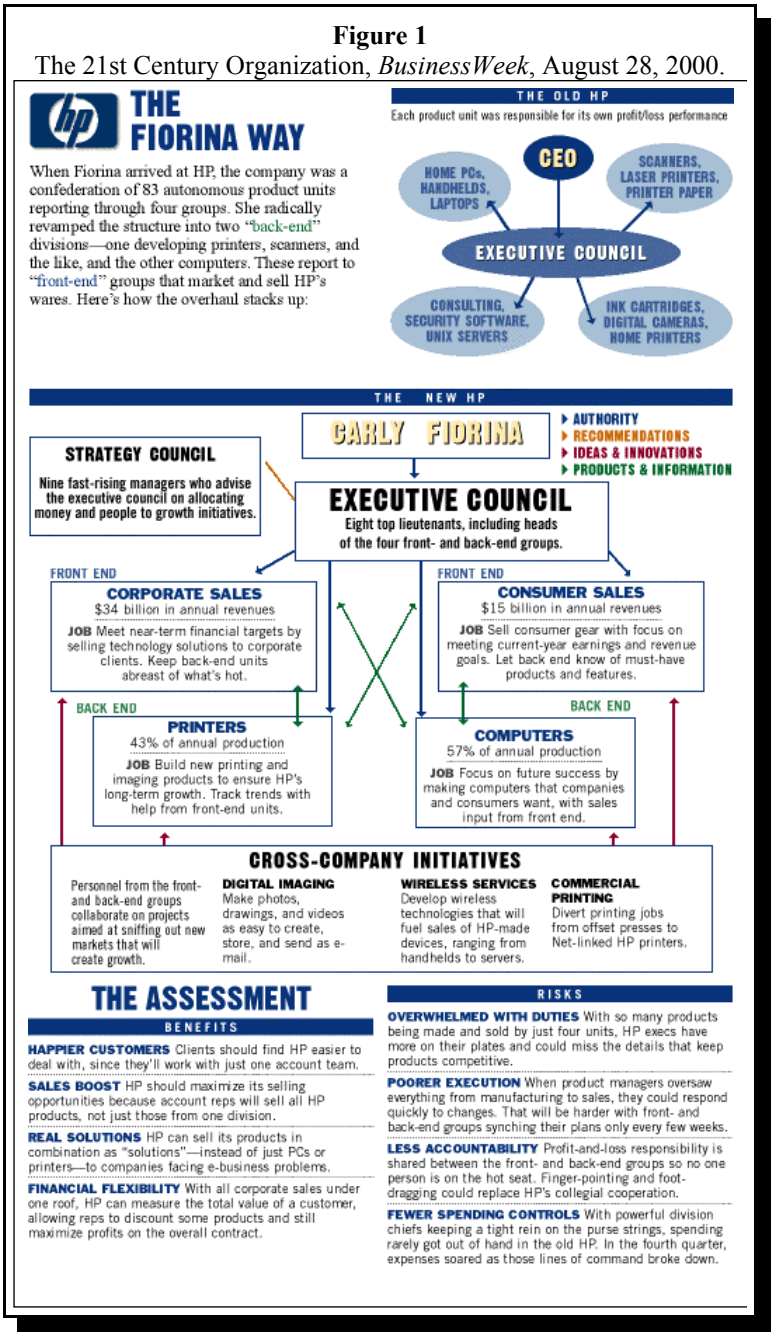
ABSTRACT

Consider the situation facing new Hewlett-Packard CEO Carly Fiorina in 2001. The unfortunate reality for her: H-P's lumbering organization was losing touch with its global customers. Her response? As illustrated in Figure 1, Fiorina immediately dismantled the decentralized structure honed throughout HP's 64-year history. Pre-Fiorina, HP was a collection of 83 independently run units, each focused on a product such as scanners or security software. Fiorina collapsed those into four sprawling organizations. One so-called back-end unit develops and builds computers, and another focuses on printers and imaging equipment. The back-end divisions hand products off to two "front-end" sales and marketing groups that peddle the wares--one to consumers, the other to corporations. The theory: The new structure would boost collaboration, giving sales and marketing execs a direct pipeline to engineers so products are developed from the ground up to solve customer problems. This was the first time a company with thousands of product lines and scores of businesses has attempted a front-back approach, a structure that requires laser focus and superb coordination.[1]

INTRODUCTION

Fiorina believed she had little choice lest the company experience a near-death experience like Xerox or, ten years earlier, IBM. The conundrum: how to make the company entrepreneurial once again and put the full force of the company behind winning in its immediate fiercely competitive technology business when they must also cook up brand-new megamarkets? It's a riddle Fiorina said she could solve only by sweeping structural change that would ready HP for the next stage of the technology revolution, when companies latch on to the Internet to transform their operations. How could the successful HP become a large entrepreneurial version of what it's visionary entrepreneur founders created a half century earlier? At its core lay a conviction that HP must become "ambidextrous," excelling at short-term execution while pursuing long-term visions that create new markets. In addition to changing HP's structure, Fiorina also sought to revamp its culture of creativity. Her plan for unleashing a new culture of creativity was what she called "inventing at the intersection." Until 2001, HP made stand-alone products and innovations from $20 ink cartridges to $3 million servers. To revolutionize HP's culture and approach, she launched three "cross-company iniatives" - wireless services, digital imaging, and commercial printing - the first formal effort to get all of HP's separate and sometimes warring "tribes" working together.[2]

Figure 1
The 21st Century Organization, *BusinessWeek*, August 28, 2000.



Will it work? The jury is still out. Regardless, she earned high marks for zeroing in of HP's core problems and for having the courage to tackle them head-on. And, if it does, the then 46-year old CEO would become a 21st century management hero for a reinvigorated HP becoming a blueprint for others trying to transform major technology companies into 21st century dynamos. Said Stanford professor Robert Burgelman at the time, "there isn't a major technology company in

the world that has solved the problem she's trying to address, and we're all going to learn from her experience."[3]

What CEO Fiorina faced, and Professor Burgelman recognizes, is the vast difference between business organizations of the 20th century and those of today. Figure 2 compares both on eighteen different characteristics. The contrasts are striking, perhaps most so for leaders and managers faced with leading them in a fast changing 21st century with much the same responsiveness as did their entrepreneurial founders in the century just ended.

Figure 2: Contrasting Views of Organizational Structures

CHARACTERISTIC	HISTORICAL VIEW	CURRENT VIEW
ORGANIZATION	The Pyramid	The Web or Network
FOCUS	Internal	External
STYLE	Structured	Flexible
SOURCE OF STRENGTH	Stability	Change
STRUCTURE	Self-sufficiency	Interdependencies
RESOURCES	Atoms–physical assets	Bits--information
OPERATIONS	Vertical integration	Virtual integration
PRODUCTS	Mass production	Mass customization
REACH	Domestic	Global
FINANCIALS	Quarterly	Real-time
INVENTORIES	Months	Hours
STRATEGY	Top-down	Bottom-up
LEADERSHIP	Dogmatic	Inspirational
WORKERS	Employees	Employees and free agents
JOB EXPECTATIONS	Security	Personal growth
MOTIVATION	To compete	To build
IMPROVEMENTS	Incremental	Revolutionary
QUALITY	Affordable best	No compromise

SOURCE: "See the World Erase Its Borders," BUSINESS WEEK, August 28, 2000.

STRUCTURING AN ENTREPRENEURIAL ORGANIZATION

Figure 2 offers a useful starting point in examining entrepreneurial organizational structure. In contrasting 20th century and 21st century corporations on different characteristics, it offers a historical or evolutionary perspective on organizational attributes associated with successful strategy execution today and just a few years ago. Successful organization once required an internal focus, structured interaction, self-sufficiency, a top-down approach. Today and tomorrow, organizational

structure reflects an external focus, flexible interaction, interdependency and a bottom-up approach just to mention a few characteristics associated with strategy execution and success. Three fundamental trends are driving decisions about entrepreneurial organizational structures in the 21st century: globalization, the internet, and speed of decision-making.

Globalization

The earlier example at Hewlett-Packard showed CEO Fiorina facing a desparate truth: H-P's cumbersome organization was losing touch with its global customers. So she radically reorganized H-P in part so multinational clients could go to just one sales and marketing group to buy everything from ink cartridges to supercomputers, in Buffalo or Bangkok. Over two-thirds of all industry either operates globally [e.g. computers, aerospace] or will soon do so. In the last half of the last decade, the percentage of sales from outside the home market for these five companies grew dramatically:

Percentage of Sales/Revenue Outside Their Home Market		
	1995	2000
GENERAL ELECTRIC	16.5	35.1%
WAL-MART	0.0	18.8
MCDONALD'S	46.9	65.5
NOKIA	85.0	98.6
TOYOTA	44.6	53.5

The need for global coordination and innovation is forcing constant experimentation and adjustment to get the right mix of local initiative, information flow, leadership and corporate culture. At Swedish-based Ericsson, top managers scrutinize compensation schemes to make managers pay attention to global performance and avoid turf battles, while also attending to their local operations. Companies like Dutch electronics giant Philips regularly move headquarters for different businesses to the hottest regions for new trends - the "high voltage" markets. Its digital set-top box is now in California, its audio business moved from Europe to Hong Kong.[4]

Global once meant selling goods in overseas markets. Next was locating operations in numerous countries. Today it will call on talents and resources wherever the can be found around the globe, just as it now sells worldwide. It may be based in the U.S., do its software programming in New Delhi, its engineering in Germany, and its manufacturing in Indonesia. The ramification on organizational structures is revolutionary.

The Internet

The net gives everyone in the organization, or working with it, from the lowest clerk to the CEO to any supplier or customer, the ability to access a vast array of information-instantaneously, from anywhere. Ideas, requests, instructions zap around the globe in the blink of an eye. It allows

the global enterprise with different functions, offices, and activities dispersed around the world to be seamlessly connected so that far-flung customers, employees, and suppliers can work together in real time. The result - coordination, communication and decision-making functions accomplished through and the purpose for traditional organizational structures become slow, inefficient, noncompetitive weights on today's organization.

Speed

Technology, or digitization, means removing human minds and hands from an organization's most routine tasks and replacing them with computers and networks. Digitizing everything from employee benefits to accounts receivables to product design cuts cost, time and payroll resulting in cost savings and vast improvements in speed. Leading-edge technologies will enable employees throughout the organization to seize opportunity as it arises. These technologies will allow employees, suppliers, and freelancers anywhere in the world to converse in numerous languages online without need for a translator to develop markets, new products, new processes. Again, the ramifications on organizational structures are revolutionary.

Whether technology assisted or not, globalization of business activity creates a potential sheer velocity of decisions that must be made which challenges traditional hierarchial organizational structures. A company like Cisco, for example, may be negotiating 50-60 alliances at one time due to the nature of its diverse operations. The speed at which these negotiations must be conducted and decisions made require a simple and accommodating organizational structure lest the opportunities may be lost.

Faced with these and other major trends, how should managers structure organizations to retain or regain their entrepreneurial roots? Our research suggests that there is no one best organizational structure to ensure a 21st century entrepreneurial company. At the same time, there are several useful guidelines and approaches that help answer this question which we will now cover in the next several sections.

MATCH STRUCTURE TO STRATEGY

The recent changes at Hewlett-Packard shown in Figure 1 illustrate this fundamental guideline. CEO Fiorina adopted the difficult, career-risking path of creating a major new structure at H-P because that new structure reflected the needs of H-P's strategy for the 21st century. An easier alternative would have been to create a strategy compatible with the existing decentralized structure of 83 semi-autonomous business units that had been in place for over half a century. While easier, however, the result would have been damaging to H-P in the long run, perhaps even fatal, because strategic priorities and initiatives would have been guided by structural considerations, rather than the other way around.

The origins of this maxim come from a historical body of strategic management research[5] that examined how the evolution of a business over time and the degree of diversification from a firm's core business affected its choice of organizational structure. The primary organizational structures associated with this important research are still prevalent today - simple functional

structures, geographical structures, multi-divisional structures, and strategic business units. Four basic conclusions were derived from this research:

1)	*A single-product firm or single dominant business firm should employ a functional structure.* This structure allows for strong task focus through an emphasis on specialization and efficiency, while providing opportunity for adequate controls through centralized review and decision making.
2)	*A firm in several lines of business that are somehow related should employ a multidivisional structure.* Closely related divisions should be combined into groups within this structure. When synergies (i.e., shared or linked activities) are possible within such a group, the appropriate location for staff influence and decision making is at the group level, with a lesser role for corporate-level staff. The greater the degree of diversity across the firm's businesses, the greater should be the extent to which the power of staff and decision-making authority is lodged within the divisions.
3)	*A firm in several unrelated lines of business should be organized into strategic business units.* Although the strategic business unit structure resembles the multidivisional structure, there are significant differences between the two. With a strategic business unit structure, finance, accounting, planning, legal, and related activities should be centralized at the corporate office. Since there are no synergies across the firm's businesses, the corporate office serves largely as a capital allocation and control mechanism. Otherwise, its major decisions involve acquisitions and divestitures. All operational and business-level strategic plans are delegated to the strategic business units.
4)	*Early achievement of a strategy-structure fit can be a competitive advantage.* A competitive advantage is obtained by the first firm among competitors to achieve appropriate strategy-structure fit. That advantage will disappear as the firm's competitors also attain such a fit. Moreover, if the firm alters its strategy, its structure must obviously change as well. Otherwise, a loss of fit will lead to a competitive disadvantage for the firm.

These research-based guidelines were derived from 20th century companies not yet facing the complex, dynamically changing environments we see today. So an easy conclusion would be to consider them of little use. That is not the case, however. First, the admonition to let strategy guide structure rather than the other way around is very important in today's entrepreneurial companies. While seemingly simple and obvious, resistance to changing existing structures - "the way we do things around here" - continues to be a major challenge to entrepreneurship in many organizations even today as H-P again illustrates. Second, the notion that firms evolve over time from a single product/service focus to multiple products/services and markets requiring different structures is an important reality to accommodate when growing many companies. Finally, many firms today have found value in multiple structures operating simultaneously in their company. People may be assigned within the company as part of a functional structure, but they work on teams or other groupings that operate outside the primary functional structure. We will explore this practice in a subsequent section, but the important point here is that while new and important hybrid organizational structures have proven essential to creating an entrepreneurial organization in the 21st century, these same "innovative" firms often incorporate these "older" primary organizational structures in the fabric of their contemporary entrepreneurial structure.

BALANCE THE DEMANDS FOR CONTROL/DIFFERENTIATION WITH THE NEED FOR COORDINATION/INTEGRATION

Specialization of work and effort allows a unit to develop greater expertise, focus, and efficiency. So it is that some organizations adopt functional, or similar structures. Their strategy depends on dividing different activities within the firm into logical, common groupings - sales, operations, administration, or geography - so that each set of activity can be done most efficiently. Control of sets of activities is at a premium. Dividing activities in this manner, sometimes called "differentiation," is an important structural decision. At the same time, these separate activities, however they are differentiated, need to be coordinated and integrated back together as a whole so the business functions effectively. Demands for control and the coordination needs differ across different types of businesses and strategic situations.

The rise of a consumer culture around the world has led brand marketers to realize they need to be more responsive to local preferences. Coca-Cola, for example, used to control its products rigidly from its Atlanta headquarters. But managers have found in some markets consumers thirst for more than Coke, Diet Coke, and Sprite. So Coke has altered its structure to reduce the need for control in favor of greater coordination/integration in local markets where local managers independently launch new flavored drinks. At the same time, GE, the paragon of new age organization, had altered its GE Medical Systems organization structure to allow local product managers to handle everything from product design to marketing. This emphasis on local coordination and reduced central control of product design led managers obsessed with local rivalries to design and manufacture similar products for different markets - a costly and wasteful duplication of effort. So GE reintroduced centralized control of product design, with input from a worldwide base of global managers, and their customers, resulting in the design of several single global products produced quite cost competitively to sell worldwide. GE's need for control of product design outweighed the coordination needs of locally focused product managers.[6] At the same time, GE obtained input from virtually every customer or potential customer worldwide before finalizing the product design of several initial products, suggesting that it rebalanced in favor of more control, but organizationally coordinated input from global managers and customers so as to ensure a better potential series of medical scanner for hospitals worldwide.

Restructure to Emphasize and Support Strategically Critical Activities

Restructuring has been the buzzword of global enterprise for the last 10 years. Its contemporary meaning is multifaceted. At the heart of the restructuring trend is the notion that some activities within a business's value chain are more critical to the success of the business's strategy than others. Wal-Mart's organizational structure is designed to ensure that its impressive logistics and purchasing competitive advantages operate flawlessly. Coordinating daily logistical and purchasing efficiencies among separate stores lets Wal-Mart lead the industry in profitability yet sell retail for less than many competitors buy the same merchandise at wholesale. Motorola's organizational structure is designed to protect and nurture its legendary R&D and new product development capabilities - spending over twice the industry average in R&D alone each year.

Motorola's R&D emphasis continually spawns proprietary technologies that support its technology-based competitive advantage. Coca-Cola emphasizes the importance of distribution activities, advertising, and retail support to its bottlers in its organizational structure. All three of these companies emphasize very different parts of the value chain process, but they are extraordinarily successful in part because they have designed their organizational structures to emphasize and support strategically critical activities.

Two critical considerations arise when restructuring the organization to emphasize and support strategically critical activities. First, managers need to make the strategically critical activities the central building blocks for designing organizational structure. Those activities should be identified and separated as much as possible into self-contained parts of the organization. Then the remaining structure must be designed so as to ensure timely integration with other parts of the organization.

While this is easily proposed, managers need to recognize that strategically relevant activities may still reside in different parts of the organization, particularly in functionally organized structures. Support activities like finance, engineering, or information processing are usually self-contained units, often outside the unit around which core competencies are built. This often results in an emphasis on departments obsessed with performing their own tasks more than emphasizing the key results (customer satisfaction, differentiation, low costs, speed) the business as a whole seeks. So the second consideration is to design the organizational structure so that it helps coordinate and integrate these support activities to (1) maximize their support of strategy-critical primary activities in the firm's value chain and (2) does so in a way to minimize the costs for support activities and the time spent on internal coordination. Managerial efforts to do this in the 1990s have placed reengineering, downsizing, and outsourcing as prominent tools for structuring entrepreneurial organizations.

Reengineer Strategic Business Processes

Business process reengineering (BPR), popularized by consultants Michael Hammer and James Champy,[7] is one of the more popular methods by which organizations worldwide are undergoing restructuring efforts to remain entrepreneurial in the 21st century. BPR is intended to reorganize a company so that it can best create value for the customer by eliminating barriers that create distance between employees and customers. It involves fundamental rethinking and radical redesign of a business process. It is characterized as radical because it strives to structure organizational efforts and activities around results and value creation by focusing on the processes that are undertaken to meet customer needs, not specific tasks and functional areas such as marketing and sales.

Business reengineering reduces fragmentation by crossing traditional departmental lines and reducing overhead to compress formerly separate steps and tasks that are strategically intertwined in the process of meeting customer needs. This "process orientation," rather than a traditional functional orientation, becomes the perspective around which various activities and tasks are then grouped to create the building blocks of the organization's structure. This is usually accomplished by assembling a multifunctional, multilevel team that begins by identifying customer needs and how

the customer wants to deal with the firm. Customer focus must permeate all phases. Companies that have successfully reengineered their operations around strategically critical business processes have pursued the following steps:[8]

♦	Develop a flow chart of the total business process, including its interfaces with other value chain activities.
♦	Try to simplify the process first, eliminating tasks and steps where possible and analyzing how to streamline the performance of what remains.
♦	Determine which parts of the process can be automated (usually those that are repetitive, time-consuming, and require little thought or decision); consider introducing advanced technologies that can be upgraded to achieve next-generation capability and provide a basis for further productivity gains down the road.
♦	Evaluate each activity in the process to determine whether it is strategy-critical or not. Strategy-critical activities are candidates for benchmarking to achieve best-in-industry or best-in-world performance status.
♦	Weigh the pros and cons of outsourcing activities that are noncritical or that contribute little to organizational capabilities and core competencies.
♦	Design a structure for performing the activities that remain; reorganize the personnel and groups who perform these activities into the new structure.

When asked recently about his new networking-oriented direction for IBM, IBM CEO Gerstner responded: "It's called *reengineering*. It's called *getting competitive*. It's called *reducing cycle time and cost*, *flattening organizations, increasing customer responsiveness*. All of these require a collaboration with the customer and with suppliers and with vendors."

Downsize and Self-Manage: Force Decisions to Operating Levels

Reengineering and a value orientation have led managers to scrutinize even further the way their organizational structures could become more entrepreneurial. That scrutiny has led to downsizing, outsourcing, and self-management as three important themes influencing the organizational structures into the 21st century. *Downsizing* is eliminating the number of employees, particularly middle management, in a company. It's hard to find a major corporation that hasn't downsized in recent years. But simple reductions in staffing don't make for entrepreneurial organizations. Here's a checklist, developed from interviews with executives and consultants, that may tell if a company needs a diet:

	Company Characteristic	Analysis
1.	Layers of management between CEO and the shop floor.	Some companies, such as Ameritech, now have as few as four or five where as many as 12 had been common. More than six is most likely too many.

2.	Number of employees managed by the typical executive.	At lean companies, spans of control range up to one manager to 30 staffers. A ratio of lower than 1:10 is a warning of arterial sclerosis.
3.	Amount of work cut out by your downsizing	Eliminating jobs without cutting out work can bring disaster. A downsizing should be accompanied by at least a 25% reduction in the number of tasks performed. Some lean companies have hit 50%.
4.	Skill levels of the surviving management group.	Managers must learn to accept more responsibility and to eliminate unneeded work. Have you taught them how?
5.	Size of your largest profit center by number of employees.	Break down large operating units into smaller profit centers - less than 500 employees is a popular cutoff - to gain the economies of entrepreneurship and offset the burdens of scale.
6.	Post-downsizing size of staff at corporate headquarters.	The largest layoffs, on a percentage basis, should be at corporate headquarters. Is is often the most overstaffed - and the most removed from customers.

The result of this scrutiny, along with continuous improvements in information processing technology, has been widespread downsizing in the number of management personnel in thousands of companies worldwide. Companies in search of entrepreneurial organizations often eliminate whole levels of management. General Electric went from 400,000 to 280,000 employees in ten years while its sales tripled and its profit rose fivefold.

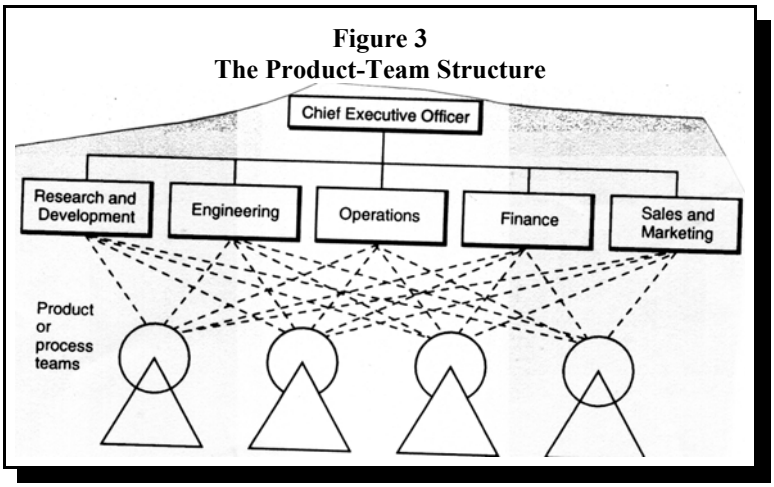
One of the outcomes of downsizing is increased *self-management* at operating levels of the company. Cutbacks in the number of management people left those that remained with more work to do. The result was that they had to give up a good measure of control to workers, and they had to rely on those workers to help out. Spans of control, traditionally thought to maximize under 10 people, have become much larger due to information technology, running "lean and mean," and delegation to lower levels. Ameritech, one of the Baby Bells, saw its span of control rise to as much as 30 to 1 in some divisions because most of the people that did staff work - financial analysts, assistant managers, and so on - disappeared. This delegation, really a form of entrepreneurial empowerment, is accomplished through concepts like self-managed work groups, reengineering, and automation. It is also seen through efforts to create distinct businesses within a business - conceiving a business as a confederation of many "small" businesses, rather than one large, interconnected business. Whatever the terminology, the idea is to push decision making down in the organization by allowing major management decisions to be made at operating levels. The result is often the elimination of up to half the levels of management previously existing in an organizational structure making the organization vastly more entrepreneurial.

Allow multiple structures to operate simultaneously within the organization to accommodate products, geography, innovation and customers

The ***matrix organization*** was one of the early structural attempts to do this so that skills and resources could be better assigned and used within a large company. People typically had a permanent assignment to a certain organizational unit, usually a functional or staff department, yet they were also frequently assigned to work in another project or activity at the same time. For example, a product development project may need a market research specialist for several months and a financial analyst for a week. It was tried by many companies, and is still in use today. The dual chains of command, particularly given a temporary assignment approach, proved problematic for some organizations, particularly in an international context complicated by distance, language, time and culture.

The ***product-team structure*** emerged as an alternative to the matrix approach to simplify and amplify the focus of resources on a narrow but strategically important product, project, market, customer or innovation. Figure 3 illustrates how the product-team structure looks.

Figure 3
The Product-Team Structure



The product-team structure assigns functional managers and specialists (e.g., engineering, marketing, financial, R&D, operations) to a new product, project, or process team that is empowered to make major decisions about their product. The team is usually created at the inception of the new product idea, and they stay with it indefinitely if it becomes a viable business. Instead of being assigned on a temporary basis, as in the matrix structure, team members are assigned permanently to that team in most cases. This results in much lower coordination costs and, since every function is represented, usually reduces the number of management levels above the team level needed to approve team decisions.

It appears that product teams formed at the beginning of product-development processes generate cross-functional understanding that irons out early product or process design problems. They also reduce costs associated with design, manufacturing, and marketing, while typically speeding up innovation and customer responsiveness because authority rests with the team allowing decisions to be made more quickly. The ability to make speedier, cost-saving decisions has the added advantage of eliminating the need for one or more management layers above the team level,

which would traditionally have been in place to review and control these types of decisions. While seeming obvious, it has only recently become apparent that those additional management layers were also making these decisions with less firsthand understanding of the issues involved than the cross-functional team members brought to the product or process in the first place.

Hindsight reveals the obvious: product-team structures empower numerous pockets of entrepreneurial behavior within what was previous a sluggish, non-entrepreneurial organization.

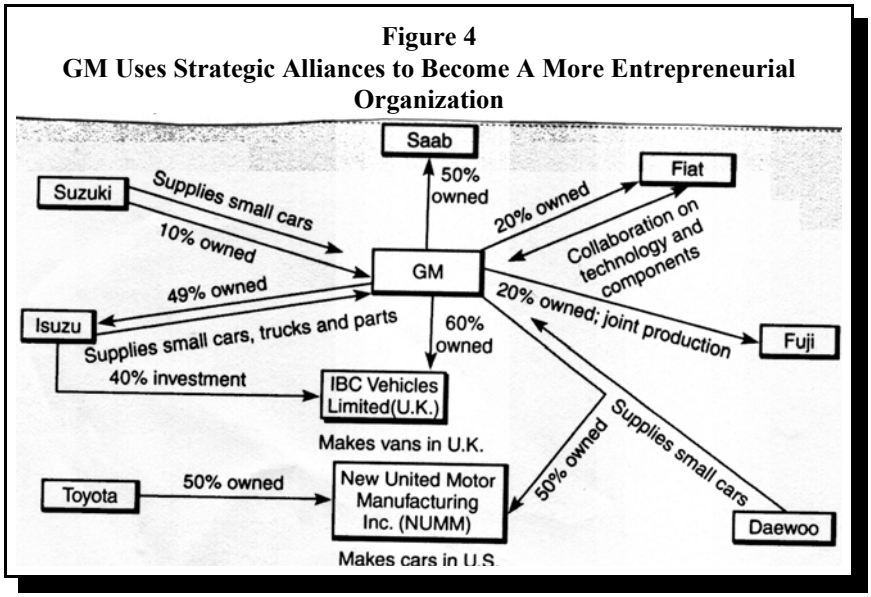
Take advantage of being a Virtual Organization

True 21st century corporations will increasingly see their structure become an elaborate network of external and internal relationships. This organizational phenomenon has been termed the "*virtual organization*," which is defined as a temporary network of independent companies --- suppliers, customers, sub-contractors, even competitors - linked primarily by information technology to share skills, access to markets, and costs.[9] Outsourcing along with strategic alliances are integral in making a virtual organization work. Globalization has accelerated the use of and need for the virtual organization.

Outsourcing was an early driving force for the virtual organization trend. Dell does not make PCs. Cisco doesn't make its world renowned routers. Motorola doesn't make cell phones. Sony makes Apple's low-end PowerBook computers. *Outsourcing* is simply obtaining work previously done by employees inside the companies from sources outside the company. Managers have found that as they attempt to restructure their organizations, particularly if they do so from a business process orientation, numerous activities can often be found in their company that are not "strategically critical activities." This has particularly been the case of numerous staff activities and administrative control processes previously the domain of various middle management levels in an organization. But it can also refer to primary activities that are steps in their business's value chain - purchasing, shipping, making certain parts, and so on. Further scrutiny has led managers to conclude that these activities not only add little or no value to the product or services, but that they can be done much more cost effectively (and competently) by other businesses specializing in these activities. If this is so, then the business can enhance its competitive advantage by outsourcing the activities. Many organizations have outsourced information processing, various personnel activities, and production of parts that can be done better outside the company. Outsourcing, then, can be a source of competitive advantage and result in a leaner, flatter organizational structure.

Strategic alliances, some long-term and others for very short periods, with suppliers, partners, contractors, and other providers of world class capabilities allow partners to the alliance to focus on what they do best, farm out everything else, and quickly provide value to the customer. Engaging in alliances, whether longterm or one-time, let each participant take advantage of fleeting opportunities quickly, usually without tieing up vast amounts of capital. FedEx and the U.S. Postal Service have formed an alliance - FedEx planes carry USPS next-day letters and USPS delivers FedEx ground packages - to allow both to challenge their common rival, UPS. Figure 4 shows how General Motors, in its effort to become more entrepreneurial globally, has entered into numerous alliances with competitors. Cisco owns only two of 34 plants that produce its routers, and over 50% of all orders fulfilled by Cisco are done without a Cisco employee being involved.

Figure 4
GM Uses Strategic Alliances to Become A More Entrepreneurial Organization



Source: "Carmakers Take Two Routes to Global Growth," Financial Times [July 11, 2000, p. 19]; General Motors Annual Reports.

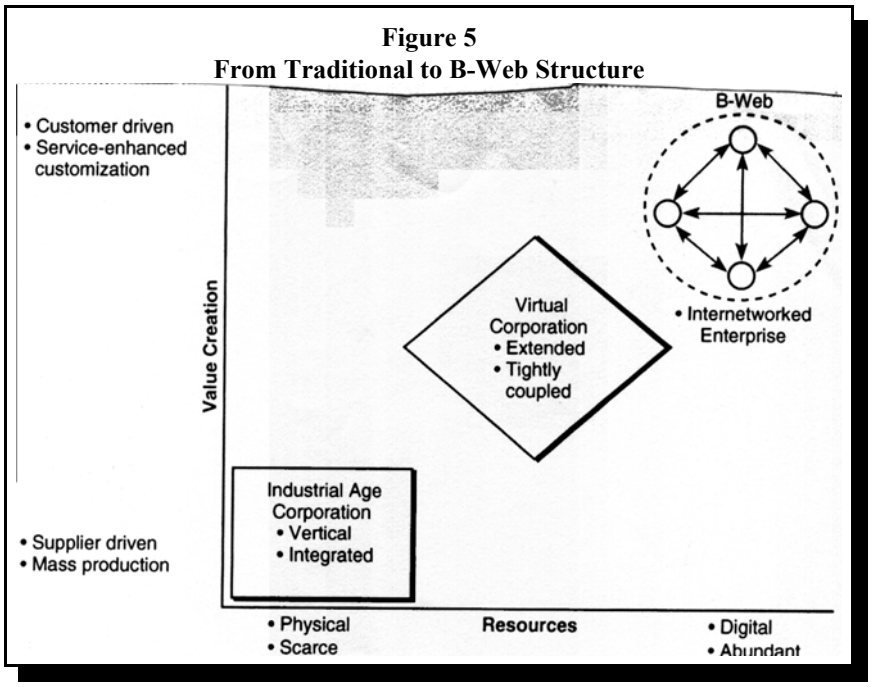
Web-based organizations

As we noted at the beginning of this paper, globalization has accelerated many changes in with way organizations structure, and that is certainly the case in driving the need to become part of a virtual organization or make use of one. Technology, particularly driven by the internet, has and will be a major driver of the virtual organization. Commenting on technology's impact on Cisco, John Chambers observed that with all its outsourcing and strategic alliances, roughly 90% of all orders come into Cisco without ever being touched by human hands. "To my customers, it looks like one big virtual plant where my suppliers and inventory systems are directly tied into our virtual organization," he said. "That will be the norm in the future. Everything will be completely connected, both within an company and between companies. The people who get that will have a huge competitive advantage."[10]

The web's contribution electronically has become simultaneous the best analogy in explaining the future entrepreneurial organization. So it is not just the web as in the internet, but a web-like shape of successful organizational structures in the future. If there are a pair of images that symbolize the vast changes at work, they are the pyramid and the web. The organizational chart of large-scale enterprise had long been defined as a pyramid of ever-shrinking layers leading to an omnipotent CEO at its apex. The 21st century entrepreneurial organization, in contrast, is far more likely to look like a web: a flat, intricately woven form that links partners, employees, external contractors, suppliers, and customers in various collaborations. The players will grow more and more interdependent. Fewer companies will try to master all the disciplines necessary to produce

and market their goods but will instead outsource skills--from research and development to manufacturing--to outsiders who can perform those functions with greater efficiency.[11] Figure 5 illustrates this evolution in organization structure to what it calls the B-Web, a truly internet driven form of organization designed to deliver speed, customized service-enhanced products to savvy customers from an integrated virtual B-Web organization pulling together abundant, world class resources digitally.

Figure 5
From Traditional to B-Web Structure



Source: Tapscott, Dan, David Ticoll, and Alex Lowry, Digital Capital: Harnessing the Power of Business Webs (Boston: Harvard Business School Press, 2000).

Managing this intricate network of partners, spin-off enterprises, contractors, and freelancers will be as important as managing internal operations. Indeed, it will be hard to tell the difference. All of these constituents will be directly linked in ways that will make it nearly impossible for outsiders to know where an individual firm begins and where it ends. "Companies will be much more molecular and fluid," predicts Don Tapscott, co-author of Digital Capital. "They will be autonomous business units connected not necessarily by a big building but across geographies all based on networks. The boundaries of the firm will be not only fluid or blurred but in some cases hard to define." [12]

Remove Structural Barriers and Create a Boundaryless, Ambidextrous Learning Organization

The evolution of the virtual organizational structure as an integral mechanism managers use to create entrepreneurial organizations has brought with it recognition of the central role knowledge plays in this process. *Knowledge* may be in terms of operating know-how, relationships with and knowledge of customer networks, technical knowledge upon which products or processes are based or will be, relationships with key people or a certain person that can get things done quickly, and so forth. McKinsey organizational expert Lowell Bryan sees knowledge shaping future organizational structure with managers becoming knowledge "nodes" through which intricate networks of personal relationships - inside and outside the formal organization - are constantly coordinated to bring together relevant know-how and successful action.

Management icon Jack Welch coined the term "*boundaryless*" organization, to characterize what he attempted to make GE become more entrepreneurial: to be able to generate knowledge, share knowledge and get knowledge to the places it could be best used to provide superior value. A key component of this concept was erasing internal divisions so the people in GE could work across functional, business and geographic boundaries to achieve an integrated diversity - the ability to transfer the best ideas, the most developed knowledge, and the most valuable people quickly, easily and freely throughout GE. Here is his description:

> *Boundaryless behavior is the soul of today's GE .. Simply put, people seem compelled to build layers and walls between themselves and others, and that human tendency tends to be magnified in large, old institutions like ours. These walls cramp people, inhibit creativity, waste time, restrict vision, smother dreams and above all, slow things down ... Boundaryless behavior shows up in actions of a woman from our Appliances Business in Hong Kong helping NBC with contacts needed to develop satellite television service in Asia ... And finally, boundaryless behavior means exploiting one of the unmatchable advantages a multi-business GE has over almost any other company in the world. Boundaryless behavior combines 12 hige global businesses - each number one or number two in its markets - into a vast laboratory whose principal product is new ideas, coupled with a common commitment to spread them throughout the Company.*
>
> --- Letter to Shareholders, Jack Welch, Chairman, General Electric Company, 1981-2001

A shift from what INSEAD's Subramanian Rangan calls "*exploitation to exploration*" indicates the growing importance of entrepreneurial organizations being structures that enable a "*learning organization*" so as to allow global companies the chance to build competitive advantage.[13] Rather than going to markets to exploit brands or for inexpensive resources, in Rangan's view, the smart ones are going global to learn. This shift in the intent of the structure, then, is to seek information, to create new competencies. Demand in another part of the world could be a new product trend setter at home. So a firm's structure needs to be organized to enable learning, to share knowledge, to create opportunities to create it. Others look to companies like 3M, or Proctor Gamble, which allow slack time, new product champions, manager mentors --- all put in place in the structure to provide resources, support and advocacy for cross functional collaboration leading to innovation, new product development, the generation and use of new ideas. This perspective is similar to the boundaryless notion - accommodate the speed of change and therefore opportunity by freeing up historical constraints found in traditional organizational approaches. So having structures

that emphasize coordination over control, that allow flexibility [are *ambidextrous*], emphasize the value and importance of informal relationships and interaction over formal systems, techniques and controls are all characteristics associated with what are seen as effective structures for the 21st century.

Redefine the role of corporate headquarters from control to support and coordination

The role of corporate management is multi-business and multinational companies increasingly face a common dilemma - how can the resource advantages of a large company be exploited, while ensuring the responsiveness and creativity found in the small companies against which each of their businesses compete? This dilemma constantly presents managers with conflicting priorities or adjustments as corporate managers:[14]

♦	Rigorous financial controls and reporting enable cost efficiency, resource deployment, and autonomy across different units; flexible controls are conducive to responsiveness, innovation and "boundary spanning."
♦	Multibusiness companies historically gain advantage by exploiting resources and capabilities across different businesses and markets, yet competitive advantage in the future increasingly depends on the creation of new resources and capabilities.
♦	Aggressive portfolio management seeking maximum shareholder value is often best achieved through independent businesses; the creation of competitive advantage increasingly requires the management - recognition and coordination - of business interdependencies.

Increasingly, globally engaged multibusiness companies are changing the role of corporate headquarters from a control, resource allocation, and performance monitoring to one of coordinator of linkages across multiple business, supporter and enabler of innovation and synergy. One way this has been done is to create an executive council comprised of top managers from each business, usually including 4-5 of their key managers, with the council then serving as the critical forum for corporate decisions, discussions, and analysis. Figure 1 at the beginning of this article showed this type of forum being central to H-P's radical restructuring. GE created this approach over twenty years ago in its rise to top corporate success. These councils replace the traditional corporate staff function of overseeing and evaluating various business units, replacing it instead with a forum to share business unit plans, to discuss problems and issues, to seek assistance and expertise, and to foster cooperation and innovation.

Welch's experience at GE provides a useful example. Upon becoming Chairman, he viewed GE headquarters as interfering too much in GE's various businesses, generating too much paperwork, and offering minimal value added. He sought to "*turn their role 180 degrees from checker, inquisitor, and authority figure to facilitator, helper, and supporter of GE's 13 businesses*." He said "*what we do here at headquarters ... is to multiply the resources we have, the human resources, the finacial resources, and the best practices ... Our job is to help, it's to assist, it's to make these businesses stronger, to help them grown and be more powerful*." GE's Corporate Executive Council was reconstituted from predominantly a corporate level group of sector managers

[which was eliminated] into a group comprised of the leaders of GE's 13 businesses and a few corporate executives. They met formally two days each quarter to discuss problems, issues and to enable cooperation and resource sharing. This has expanded to other councils throughout GE intent on greater coordination, synergy and idea sharing throughout GE.

Welch's admonition 15 years before his recent retirement perhaps serves as an appropriate conclusion to this article about creating an entrepreneurial organization for the 21st century. At the time when asked what he was trying to do at GE he said:

> *"Size is no longer the trump card it once was in today's brutally competitive world marketplace - a marketplace that is unimpressed with logos and sales numbers but demands, instead, value, performance and speed. Our goal is to get that small-company soul and small company speed inside out a big company body."*

That about sums it up. For business organizations to be successful in the emerging 21st century, they will have to become increasingly entrepreneurial. And becoming entrepreneurial means structuring an organization to embrace speed, change, and responsiveness. This paper has examined ways companies may do so to become 21st century entrepreneurial organizations.

ENDNOTES

1 The radical, *BusinessWeek*, February 19, 2001.

2 Ibid.

3 Ibid.

4 See the world, erase its borders, *Business Week*, August 28, 2000.

5 Chandler, Alfred D. (1962). *Strategy and Structure*, Cambridge: MIT Press.
Wrigley, Larry. (1970). *Divisional Autonomy and Diversification,* Boston: Harvard Business School, Doctoral Dissertation.
Rumelt, Richard. (1982). Diversification strategy and performance, *Strategic Management Journal, 3* (January-February), 359-69.
Rumelt, Richard. *(1982). Strategy, Structure and Economic Performance*, Boston: HBS Press.
(Rumelt used a similar, but more detailed classification scheme).
Nathanson, D.A. & J.S. Cassano. (1982). Organization, diversity, and performance, *Wharton's Magazine, 6,* 19-26.
Bartlett, Christopher A. & Sumantra Ghoshal. (1990). Matrix management: Not a structure, A frame of mind, *Harvard Business Review, 68*(4), 138-45.
Galbraith, V.R. & R.K. Kazanjian. (1986). *Strategy Implementation: Structure, Systems & Processes*, St. Paul, MN: West Publishing.

6 See the world, Erase its borders, *BusinessWeek,* August 28, 2000.

7 Hammer, Michael & James Champy. (1993). *Reengineering the Corporation*. New York: HarperBusiness.

8 Wade, Judy. (1993). How to make reengineering really work, *Harvard Business Review, 71*(6), (November-December), 119-31.

9 Davidow, W. H. & M. S. Malone. (1992). *The Virtual Corporation*. New York: Harper.

10 *Cisco Annual Report,* 2000.

11 The 21st century organization, *BusinessWeek*, August 28, 2000.

12 Ibid.

13 Rangan, Subramanian. (1999). *A Prism on Globalization*. Fountainebleau, FR.: INSEAD.

14 Grant, Robert M. (2001). *Contemporary Strategy Analysis*. Oxford: Blackwell, 503.

REFERENCES

Bartlett, C. A. & S. Ghoshal. (1990). Matrix management: Not a structure, A frame of mind, *Harvard Business Review, 68*(4), 138-45.

Carmakers take two routes to global growth, *Financial Times* (July 11, 2000), 19.

Chandler, A. D. (1962). *Strategy and Structure*, Cambridge: MIT Press.

Cisco Annual Report, 2000.

Davidow, W. H. & M. S. Malone. (1992). *The Virtual Corporation*. New York: Harper.

Galbraith, V.R. & R.K. Kazanjian. (1986). *Strategy Implementation: Structure, Systems & Processes*, St. Paul, MN: West Publishing.

Grant, R. M. (2001). *Contemporary Strategy Analysis*. Oxford: Blackwell, 503.

Hammer, M. & J. Champy. (1993). *Reengineering the Corporation.* New York: HarperBusiness.

Nathanson, D.A. & J.S. Cassano. (1982). Organization, diversity, and performance, *Wharton's Magazine, 6,* 19-26.

Rangan, S. (1999). *A Prism on Globalization*. Fountainebleau, FR.: INSEAD.

Rumelt, R. (1982). Diversification strategy and performance, *Strategic Management Journal, 3* (January-February), 359-69.

Rumelt, R. (1982). *Strategy, Structure and Economic Performance,* Boston: HBS Press.

See the world, Erase its borders, *BusinessWeek,* August 28, 2000.

Tapscott, D., D. Ticoll &A. Lowry. (2000). *Digital capital: Harnessing the power of business webs* Boston: Harvard Business School Press.

The 21st century organization, *BusinessWeek*, August 28, 2000.

The radical, *BusinessWeek*, February 19, 2001.

Wade, J. (1993). How to make reengineering really work, *Harvard Business Review, 71*(6), (November-December), 119-31.

Wrigley, L. (1970). *Divisional Autonomy and Diversification,* Boston: Harvard Business School, Doctoral Dissertation.

AN EMPIRICAL ANALYSIS OF THE BUSINESS FAILURE PROCESS FOR LARGE AND SMALL FIRMS

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ABSTRACT

This paper investigates endogenous dependence in the business failure process for large and small businesses. After controlling for systemic growth, we find the momentum in business failures from their cumulative lagged effect over time influences other distressed business to fail and creates a domino-effect. For both large and small businesses, endogenous dependence is most effectual in the months immediately prior to failure and then gradually dissipates to a level of insignificance within a two year lag. We also find new business formations counterbalance to some degree the domino-effect of business failures; however, the lag effect for new business formations is twice as long for large firms compared to small firms. Our results suggest theories of business failure and bankruptcy prediction models would be enhanced by incorporating endogenous dependence in the business failure process as an explanatory variable.

INTRODUCTION

Empirical evidence suggests business failure is a combination of firm-specific (micro) factors (e.g.; Altman, 1968, 1971; Hambrick & Crozier, 1985; Duchesneau & Gartner, 1990; Lussier, 1996; Perry, 2001; Carland et al., 2001) and external (macro) factors related to the business cycle (e.g;. Altman, 1971; Carroll & Delacroix, 1982; Rose et al., 1982; Yrle et al., 2001). The common thread running through these prior studies is their focus on the exogenous determinants of business failure, which the literature suggests are many. As Carland et al. (2001) observe, "The study of small business failure has been so institutionalized, that the causes of failure have become clichés: managerial incompetence, undercapitalization, etc" [p.78].

The purpose of this paper is to analyze endogenous dependence in the business failure process. Specifically, we present evidence of lead times in two forces affecting the number of large and small business failures. One force is business failure momentum which we characterize as a domino-effect: one firm's failure causes other firms to fail which cause still more firms to fail and so on. We also present evidence of lead times in the competing force of new business formations: the formation of a new business prevents other established firms from failing which prevent still more firms from failing and so on. Research along these lines could add an important new dimension to the existing body of business failure research by enhancing existing bankruptcy prediction models, improving managerial decision making, and helping auditors, bankers, and financial analysts assess the failure risk of their clients.

While some specific hypotheses can be generated, our limited understanding of business failure endogenicity suggests an exploratory, inductive research approach is appropriate and this study takes such an approach. For our empirical analysis we use quarterly and monthly business failure data for the period January 1986 to September 1998. Separate regressions are estimated for large business failures and small business failures, and for each regression various lead-lag relationships are tested in order to determine the highest statistical correlation, on a multivariate basis, between variables. To control for systemic growth, our regression analysis includes a linear time trend control variable and, where appropriate, we adjust for the affects of autocorrelation.

Overall our evidence indicates significant endogenous dependence in the business failure process for both large and small firms, with the stronger correlations occurring in the case of small firms. For both large and small firms, endogenous dependence is most influential in the months immediately prior to failure then gradually dissipates to a level of insignificance within two years. Our results further suggest new business formations counterbalance to some degree the domino-effect of business failure momentum; however, the lag effect for new business formations is twice as long for large firms compared to small firms. Specifically, for large businesses we find the counterbalancing influence of new business formations is most powerful at sixteen months prior to failure and then diminishes rapidly, while for small businesses we find new business formations have their greatest influence eight months before failure. The diminishing impact of new business formations mark the onset of the death struggle identified by Hambrick and D'Aveni's (1988), and our evidence suggests once a firm begins a death struggle, it must be very lucky to overcome endogenous dependence in the business failure process.

The next section summarizes the related literature on business failures and develops the study's hypotheses. This is followed by a section discussing the sample selection and research design. The results are presented next and in the final section of the paper we summarize our findings and conclusions.

HYPOTHESES DEVELOPMENT

Bankruptcy is a serious economic problem in the United States and the bankruptcy literature is vast. One of the most extensive areas of study in the bankruptcy literature has been bankruptcy prediction research. An accurate bankruptcy prediction model offers many economic benefits and as Jones (1987, p.131) observes:

> *The continued strong interest in bankruptcy prediction indicates the importance of the topic. An accurate prediction of bankruptcy can benefit a variety of interested parties. For example, investors may seek to avoid losses associated with bankruptcy….Lenders may use bankruptcy prediction techniques to help assess the risk on loan default. Auditors must issue a qualified opinion when there is substantial uncertainty about an entity's continued existence. A bankruptcy prediction model could warn an auditor about a company's vulnerability and protect the auditor from lawsuits arising from a failure to disclose the possibility of bankruptcy. Management may choose to defend a proposed merger against antitrust charges on the basis that an acquired company was failing. Employees or their unions may want to assess the risk of bankruptcy and the resulting threat to continued*

employment. Academicians have used bankruptcy prediction models to demonstrate the information value of cash flow and price-level adjusted data.

Most of the bankruptcy prediction studies produced in the 1960s, 1970s, and 1980s are well summarized in a number of publications (e.g.; Altman et al., 1981; Scott, 1981; Altman, 1983; Zavgren, 1983; Jones, 1987; Platt & Platt, 1990). The better known multivariate studies use multiple discriminate analysis (e.g.; Altman, 1968; Altman et al., 1977), regression modeling (e.g.; Edminster, 1972), logit analysis (e.g.; Olson, 1980; Zavgren, 1983), probit analysis (e.g.; Zmijewski, 1984), and recursive partitioning (e.g.; Frydman, et al., 1985). While some of these methodologies have resolved certain statistical issues, the classification results one year prior to failure are fairly invariant and somewhat disappointing. Corporate failure models described as having good predictive ability generally report out-of-sample classification results that are ten or more percentage points lower than the ex post results.

Bankruptcy prediction studies have documented numerous exogenous determinants of business failure, including many firm-specific (micro) predictors. Most researchers have selected financial ratios as predictor variables because of their popularity and predictive success in previous studies (e.g.; Beaver, 1966; Altman, 1968; Olson, 1980; Frydman et al., 1985; Casey & Bartczak, 1985; Hambrick & Crozier, 1985; Duchesneau & Gartner, 1990; Lussier, 1996; Perry, 2001). Other researchers have examined macroeconomic predictors under the assumption that any given firm may have a higher propensity to fail in times of economic recession than in times of economic prosperity. These researchers generally have selected popular economic indicators as predictor variables (e.g.; Rose et al., 1982; Carroll & Delacroix, 1982; Yrle et al., 2001). Although this approach to variable selection has had little success in developing an integrated theory of business failure, there has been success in using such variables to distinguish between bankrupt and nonbankrupt firms.

Where the interest is in understanding bankruptcy rather than simply predicting it, there must be the ability to apply economic interpretations to the prediction models. The present study is aimed at providing insights into the process of business failure for large and small businesses in the context of aggregate business failures. While most of the bankruptcy literature has concentrated on identifying exogenous factors related to failure, only a few studies (e.g.; Hambrick & D'Aveni, 1988; Venkataraman et al., 1990) have investigated the process of failure within the firm, and no study to our knowledge has investigated endogenous dependence among failed firms. Understanding such interrelationships among failed firms is fundamental to developing an integrated theory of business failure and advancing our understanding of bankruptcy prediction.

Hambrick and D'Aveni (1988) document the dynamics of large corporate failure by using a matched pair design of 57 large bankruptcies and 57 matched survivors. Perhaps their most striking finding is that the bankrupts showed signs of relative weakness very early, as far back as ten years before they failed. From years t-10 to t-2, the bankrupts maintained cushions comparable to their matched firm survivors for meeting current obligations, but at the same time that their profitability was suffering and their potential slack was depleting. In the end their cushion of short-term resources collapsed and failure resulted. Hambrick and D'Aveni concluded the failure process for large companies is a long protracted downward spiral consisting of four phases. The final

stage they termed the "death struggle" (years t-2 and t-1 for the firms in their sample). It is in this final stage that the firm's slack and performance deteriorate sharply, and death occurs.

Regarding the failure process for small firms, Venkataraman et al. (1990) investigated the interaction between environmental volatility and the liabilities of newness and smallness. Contrary to the drawn-out downward spiral documented for large firms by Hambrick and D'Aveni (1988), Venkataraman et al. (1990) found new small firm failure is generally abrupt and catastrophic. Under their process model, whether a new small business succeeds or fails depends on the nature, formation, and dissolution of specific transactions. The authors observe:

New firms in many industries often lack the collateral or bonding requirements for engaging in transactions….Under such situations some firms use a transaction with an established other partner as a source of legitimacy. We call the strategy of using transactions, with one or two legitimate external parties as collateral, to attract and engage in transactions with other resource suppliers, leveraging. However, leveraging renders the overall set of transactions of the firm tightly coupled, by making the fulfillment of each transaction highly contingent upon the fulfillment of the others. And, therefore, when any one transactions in the set fails, the whole set could fail in domino-effect fashion (Venkataraman et al., 1990, p.287).

Small business failure is thus triggered by the breakdown of a key contractual relationship or transaction at a time when the small firm lacks accumulated slack. By the laws of chance some proportion of transactions fail, terminate, or are unfulfilled, due to environmental turbulence which means small business failure is partly within the control of an entrepreneur and partly a random process beyond the entrepreneur's control.

The present study extends the work of Hambrick and D'Aveni (1988) and Venkataraman et al. (1990) by examining interdependence among firms in the business failure process. While Venkataraman et al. (1990) document the interdependence among a particular firm's set of transactions; we examine the interdependence among firms as a source of transaction failure. Our first hypothesis extends the idea of coupling transactions from being an intra-firm phenomenon to include inter-firm dependence. Thus, the failure of an important transaction can have a domino-effect causing numerous other businesses to fail. This process of protracted time dependence in past business failures can be characterized as a long memory of business failures stemming from a series of failed transactions.

H1: The number of business failures is positively influenced by lag effects from prior business failures.

Counterbalancing the domino-effect of business failure is new business formations. New business formations create new transactions which allow existing businesses to implement risk reducing strategies such as diversifying or accumulating slack. These actions make the firm less vulnerable to the failure of any particular transaction in its set of transactions. The number of new business formations thus is a proxy for economic activities that prevent existing businesses from failing. However, once a firm begins what Hambrick and D'Aveni (1988) describe as the "death struggle" phase of business failure, new business formations will be ineffectual in stemming the rapid disintegration of transactions. Thus, our second hypothesis is:

H2: The number of business failures is negatively influenced by lag effects from new business formations.

RESEARCH DESIGN

Both quarterly and monthly business failure data were accumulated from Dun and Bradstreet's commercial failures data for the period of January 1986 to September 1998. This sample period was one of necessity, rather than choice. In the mid-1980s Dunn and Bradstreet's decided to expand the compilation of business closing statistics in certain industry groups and this resulted in 20 months of missing data in the data set. Beginning the sample period in January 1986 avoided this missing data problem. The sample period ends in September 1998 because at this time Dun and Bradstreet reorganized its internal operations and ceased reporting business formation and business failure statistics altogether.

Table 1 presents summary statistics for large and small business failures for the sample period January 1986 - September 1998. A "failure" is defined as, "a concern that is involved in a court proceeding or voluntary action that is likely to end in a loss to creditors" (Dun and Bradstreet's measures of failures, 1955-1998). All industrial and commercial enterprises petitioned into the Federal Bankruptcy Courts are included in the failure records. Also included are: 1) concerns forced out of business through such actions in the State courts as foreclosures, executions, and attachments with insufficient assets to cover all claims; 2) concerns involved in court actions such as receiverships, reorganizations, or arrangements; 3) voluntary discontinuations with a known loss to creditors; and 4) voluntary out of court compromises with creditors. Table 1 indicates the average number of small business failures is more than double the average number of large business failures. Specifically, during the sample period the number of small business failures averaged 4085 per month compared to 1898 failures per month for large businesses. A small business is defined as a concern having less than $100,000 in current liabilities; a large business is defined as a concern having more than $100,000 in current liabilities (Dun and Bradstreet's measures of failures, 1955-1998).

Table 1 also reports the average amount of current liabilities for large and small business failures for the sample period. Current liabilities include all accounts and notes payable, whether secured or unsecured, known to be held by banks, officers, affiliated companies, suppliers, or the Government. They do not include long-term publicly held obligations (Dun and Bradstreet's measures of failures, 1955-1998). The amount of current liabilities is of interest because it is one of the few directly observable measures of business failure costs. A large proportion of these liabilities will never be paid, and consequently, they must be absorbed as losses by other business and non-business entities. Current liabilities for large firm failures are 50 times larger on average than the current liabilities for small firm failures.

We hypothesize (1) a positive association between lag effects of prior business failures and current business failures and (2) a negative association between lag effects of new business formations and current business failures. To test these hypotheses we regress the number of business failures on lagged business failures and lagged new business incorporations. The analysis becomes complicated because the number of business failures depends not only on past business failures and

new business formations but also on many other factors including population growth and market expansions. To control for this systemic growth, the regression includes a linear time trend control variable, defined as a time series starting at one and growing at a constant amount B=1 each time period.

Table 1:Summary Statistics for Large and Small Firm Failures for the Period January 1986 - September 1998[a]

Variables[b]	Quarter/ Month	Means	Standard Deviation	Minimums	Medians	Maximums
SMFAIL	Quarterly	12175.21	2764.60	7624.00	12339.00	18102.00
	Monthly	4084.59	936.37	2476.00	4035.00	6365.00
LGFAIL	Quarterly	5658.21	1003.00	3954.00	5529.00	7722.00
	Monthly	1898.24	351.89	1223.00	1882.00	2778.00
SMLIAB	Quarterly	218.16	40.66	155.80	212.80	300.10
	Monthly	73.19	14.59	47.60	72.80	108.40
LGLIAB	Quarterly	11626.84	7367.39	3561.20	9302.35	38047.20
	Monthly	3900.62	2868.98	972.90	2968.20	15673.90
NEW	Quarterly	178005.49	13784.29	153911.00	174196.00	205844.00
	Monthly	59335.16	5290.19	48688.00	58253.00	73060.00

[a] Small firms have less than $100,000 in current liabilities; large firms have more than $100,000 in current liabilities. A failure is defined as, "a concern that is involved in a court proceeding or voluntary action that is likely to end in a loss to creditors." Source: Dun & Bradstreet, Inc

[b] Variable Definitions:
SMFAIL = number of small firm failures;
LGFAIL = number of large firm failures;
SMLIAB = amount of current liabilities (millions of dollars) - small firm failures;
LGLIAB = amount of current liabilities (millions of dollars) - large firm failures; and
NEW = number of new business incorporations.

We estimated separate regressions for large and small business failures and do not combine large firms and small firms in the same model. For each regression we examined various lag relationships in order to determine the highest statistical correlation, on a multivariate basis, between variables. We also tested various lag relationships between large firm failures and small firm failures, and visa versa; however, these latter regressions did not improve explanatory power, and therefore, are not reported.

From the various lag combinations of quarterly data, the final specification using ordinary least squares regression is of the following form for large firm failures and small firm failures respectively:

$$LGFAIL_t = \beta_0 + \beta_1 TREND_t + \beta_2 LGFAIL_{t-1} + \beta_3 NEW_{t-6} + v_t \quad (1)$$

$$SMFAIL_t = \beta_0 + \beta_1 TREND_t + \beta_2 SMFAIL_{t-1} + \beta_3 NEW_{t-3} + v_t \quad (2)$$

Where:

$TREND_t$ = a series starting at 1 and growing at a constant amount B=1 each time period *t*;
$SMFAIL_{t-1}$ = the number small firm failures lagged one quarter back in time *t*;
$LGFAIL_{t-1}$ = the number large firm failures lagged one quarter back in time *t*; and
NEW_{t-k} = the number of new business incorporations lagged $_k$ quarters back in time *t*.

After estimating equations (1) and (2) with quarterly data, we employed the same procedure to estimate similar regressions using monthly data. This provided a detailed time series of monthly lags around points of highest statistical correlation. From the various lag combinations of monthly data, the final specification using ordinary least squares regression is of the following form for large firm failures and small firm failures respectively:

$$LGFAIL_t = \beta_0 + \beta_1 TREND_t + \beta_2 LGFAIL_{t-1} + \beta_3 LGFAIL_{t-2} + \beta_4 LGFAIL_{t-3} + \beta_5 NEW_{t-16} + \beta_6 NEW_{t-17} + \beta_7 NEW_{t-18} + v_t \quad (3)$$

$$SMFAIL_t = \beta_0 + \beta_1 TREND_t + \beta_2 SMFAIL_{t-1} + \beta_3 SMFAIL_{t-2} + \beta_4 SMFAIL_{t-3} + \beta_5 NEW_{t-16} + \beta_6 NEW_{t-17} + \beta_7 NEW_{t-18} + v_t \quad (4)$$

Where:

$TREND_t$ = a series starting at 1 and growing at a constant amount B=1 each time period *t*;
$SMFAIL_{t-J}$ = the number small firm failures lagged *J* months back in time *t*;
$LGFAIL_{t-J}$ = the number large firm failures lagged *J* months back in time *t*; and
NEW_{t-k} = the number of new business incorporations lagged *k* months back in time *t*.

Because of the autocorrelative nature of the data, we performed a time series analysis based on the Box-Jenkins approach (Box & Jenkins, 1976). Autocorrelation induces unreliability in assessing the least squares estimators in a regression model (see Choudhury, 1994). Based on the time series analysis, it was necessary to adjust for autocorrelation with regard to the quarterly data only. We evaluated the autocorrelation function (ACF) and partial autocorrelation function (PACF) of the regression residuals using SAS procedure PROC ARIMA (see SAS/ETS User's Guide, 1988) to observe the degree of autocorrelation and to identify the order of the model that sufficiently described the autocorrelation. A seventh order autoregressive (AR) model $(1 - \varphi_7 B^7)\, v_t = \varepsilon_t$ has been identified for large firms model and sixth order autoregressive (AR) model $(1 - \varphi_6 B^6)\ v_t = \varepsilon_t$ has been identified for small firms. These models were estimated using the maximum likelihood technique with SAS procedure PROC AUTOREG.

Autoregressive parameters for both the large and small firm quarterly data models were statistically significant at the .05 level. An adjustment was therefore introduced and the final specification using generalized least squares regression is of the following form for large and small firm failures:

$$LGFAIL_t = \beta_0 + \beta_1 TRENDt + \beta_2 LGFAIL_{t-1} + \beta_3 NEW_{t-6} + v_t \quad (5)$$
$$v_t = \varphi_7 v_{t-7} + \varepsilon_t ;$$

$$SMFAIL_t = \beta_0 + \beta_1 TRENDt + \beta_2 SMFAIL_{t-1} + \beta_3 NEW_{t-3} + v_t \quad (6)$$
$$v_t = \varphi_6 v_{t-6} + \varepsilon_t ;$$

Where:

$TREND_t$ = a series starting at 1 and growing at a constant amount B=1 each time period *t*;
$SMFAIL_{t-1}$ = the number small firm failures lagged one quarter back in time *t*;
$LGFAIL_{t-1}$ = the number large firm failures lagged one quarter back in time *t*; and
NEW_{t-k} = the number of new business incorporations lagged *k* quarters back in time *t*.

RESULTS

In this section we report the results of tests investigating endogenous dependence in large and small business failures. Table 2 reports correlations between the number of business failures and their monthly lags. Consistent with the first hypothesis, significant positive correlations are observed in the monthly lags for both large and small business failures. The strongest correlations, .73 for large firms and .85 for small firms, occur after a one month lag. Subsequently the monthly correlations weaken over time to the point insignificance by 24 months. The results in Table 2 also suggest the memory of business failure is longer for small firms compared to large firms.

Table 3 reports the results of the regression equations using quarterly data. The timing relationships reported in Table 3 were empirically determined in order to maximize the explanatory power of the regression model. Thus, maximum explanatory power was achieved for the large firm regression when large business failures were lagged one quarter and new business formations were lagged six quarters. In contrast, maximum explanatory power was achieved for the small firm regression when small business failures were lagged one quarter and new business formations were lagged three quarters. The Durbin-Watson statistics on the initial estimates indicated marginally significant autocorrelation among error terms; and therefore, Table 3 also reports the estimated generalized regression equations that are corrected for autocorrelation.

The coefficient estimates for FAILLAG1, the number of large or small business failures lagged one month back in time, is statistically significant ($p<.01$) and positive for both large and small firms. This result provides strong support for the first hypothesis. One interpretation of this finding is that for every pair of large firms failures in a given month, one more large business will fail the following month; similarly, for every four small business failures in a given month, three small businesses will fail the following month. The number of new business formations lagged three months back in time, NEWLAG3, is statistically significant ($p<.01$) and negative for small firms and the number of new business formations lagged six months back in time, NEWLAG6, is statistically significant ($p<.01$) and negative for large firms. These results provide strong support for the second hypothesis. One interpretation of this finding is that for every 100 new business formations, three large businesses that would otherwise fail in six months will not fail and six to seven small business that would otherwise fail in three months will not fail.

Table 2: Correlation between Number of Failures and their Lags for Large and Small Firms Monthly Data[a]

Variables[b]	Large Firm Failures	Small Firm Failures
FAILLAG1	0.73301 (<0.0001)	0.84956 (<0.0001)
FAILLAG2	0.71022 (<0.0001)	0.83607 (<0.0001)
FAILLAG3	0.63847 (<0.0001)	0.81074 (<0.0001)
FAILLAG4	0.49090 (<0.0001)	0.75318 (<0.0001)
FAILLAG5	0.54512 (<0.0001)	0.79799 (<0.0001)
FAILLAG6	0.47662 (<0.0001)	0.74497 (<0.0001)
FAILLAG7	0.44652 (<0.0001)	0.72692 (<0.0001)
FAILLAG8	0.39054 (<0.0001)	0.67578 (<0.0001)
FAILLAG9	0.42561 (<0.0001)	0.66844 (<0.0001)
FAILLAG10	0.38573 (<0.0001)	0.63894 (<0.0001)
FAILLAG11	0.36153 (<0.0001)	0.61174 (<0.0001)
FAILLAG12	0.43591 (<0.0001)	0.64860 (<0.0001)
FAILLAG13	0.27099 (0.0011)	0.52284 (<0.0001)
FAILLAG14	0.28927 (0.0005)	0.52685 (<0.0001)
FAILLAG15	0.22572 (0.0073)	0.46897 (<0.0001)
FAILLAG16	0.12568 (0.1404)	0.39555 (<0.0001)
FAILAG17	0.18943 (0.0261)	0.41332 (<0.0001)
FAILLAG18	0.04476 (0.6035)	0.29929 (0.0004)
FAILLAG19	0.01472 (0.8649)	0.28552 (0.0008)
FAILLAG20	-0.06231 (0.4728)	0.24654 (0.0039)
FAILLAG21	-0.12214 (0.1597)	0.20544 (0.0173)
FAILLAG22	-0.12372 (0.1560)	0.18292 (0.0351)
FAILAG23	-0.15721 (0.0718)	0.15188 (0.0821)
FAILLAG24	-0.14542 (0.0975)	0.14625 (0.0955)

( ) p-values

[a] Small firms have less than $100,000 in current liabilities; large firms have more than $100,000 in current liabilities. A failure is defined as, "a concern that is involved in a court proceeding or voluntary action that is likely to end in a loss to creditors." Source: Dun & Bradstreet, Inc.

[b] Variable Definitions: FAILLAG(J) = number of firm failures, large or small, lagged J months back in time.

Table 3: Extended Regressions on Number of Large and Small Firm Failures - Quarterly Data[a]

Independent Variables[b]	Large Firms	Small Firms	Large Firms (corrected for autocorrelation)[d]	Small Firms (correcte d for autocorrelation)[e]
Intercept	6472.0858 [c] (2.95)***	15788.00 (2.92)***	7146.00 (3.44)***	13057.00 (2.98)***
TREND	25.8286 (2.07)**	72.5149 (2.03)**	29.1039 (2.64)**	57.1868 (2.14)**
FAILLAG1	0.5711 (4.60)***	0.6866 (5.85)***	0.5142 (4.04)***	0.7302 (7.00)***
NEWLAG3	–	-0.0807 (-2.69)***	–	-0.0652 (-2.81)***
NEWLAG6	-0.0281 (-2.35)**	--	-0.0307 (-2.82)***	--
R-Squared	0.55	0.78	0.61	0.81
Durbin-Watson	1.73 [0.09] [f]	1.76 [.10]	1.76 [.10]	1.88 [0.20]

[a] Small firms have less than $100,000 in current liabilities; large firms have more than $100,000 in current liabilities. A failure is defined as, "a concern that is involved in a court proceeding or voluntary action that is likely to end in a loss to creditors." Source: Dun & Bradstreet, Inc.

[b] Variable Definitions:
TREND = a series starting at 1 and growing at a constant amount B=1 each time period;
FAILLAG1 = the number firm failures, large or small, lagged one quarter back in time; and
NEWLAG(J) = the number of new business incorporations lagged J quarters back in time.

[c] t-statistic reported in parenthesis are significant at ten (*), five (**), and one (***) percent levels.

[d] The model was identified as, $(1 - \varphi_7 B^7)\, v_t = \varepsilon_t$.
Estimated ARIMA model of the regression residuals from SAS, $(1+ 0.4010\, B^7)\, v_t = \varepsilon_t$
(0.0386)

e The model was identified as, $(1 - \varphi_6 B^6)\, v_t = \varepsilon_t$.
Estimated ARIMA model of the regression residuals from SAS, $(1+ 0.4237\, B^6)\, v_t = \varepsilon_t$
(0.0181)
Where p-values (significance level) for autoregressive parameters are reported in parentheses.

[f] [ ] p-values for Durbin-Watson statistic.

Table 4 reports the regression results using monthly data and as expected the monthly results are similar to the quarterly results reported in Table 3. However, some additional detail is provided by the monthly timing relationships. The coefficient estimates for the business failures lagged

variable, FAILLAG(J), gradually looses explanatory power as the monthly lag time increases. For both large and small firms, the lag effect is strongest after one month ($p<.01$), still strong and statistically significant after two months ($p<.01$), and not statistically significant after three months. These results however must be interpreted with caution due to collinearity in the monthly data. The same concern holds true regarding the coefficient estimates for the new business formations lagged variable, NEWLAG(J), reported in Table 4. Our results suggest the lag effect for new business formations is strongest for small firms at eight months and large firms at sixteen months.

Table 4: Regressions on Number of Large and Small Firm Failures - Monthly Data[a]

Independent Variables[b]	Large Firms	Small Firms
Intercept	1060.4792 [c] (2.76)***	2997.0277 (2.83)***
TREND	1.8272 (2.45)**	5.4242 (2.32)**
FAILLAG1	0.4645 (5.19)***	0.3915 (4.42)***
FAILLAG2	0.3534 (3.78)***	0.2754 (3.01)***
FAILLAG3	-0.0548 (-0.58)	0.1266 (1.46)
NEWLAG7	--	-0.0213 (-1.87)*
NEWLAG8	--	-0.0230 (-2.05)**
NEWLAG9	--	-0.0007 (-0.06)
NEWLAG16	-0.0175 (-2.86)***	--
NEWLAG17	0.0002 (0.04)	--
NEWLAG18	0.0038 (0.64)	--
R-Squared	0.66	0.79
Durbin-Watson	2.01	1.95

[a] Small firms have less than $100,000 in current liabilities; large firms have more than $100,000 in current liabilities. A failure is defined as, "a concern that is involved in a court proceeding or voluntary action that is likely to end in a loss to creditors." Source: Dun & Bradstreet, Inc.

[b] Variable Definitions:
TREND = a series starting at 1 and growing at a constant amount B=1 each time period;
FAILLAG(J) = the number firm failures, large or small, lagged J months back in time; and
NEWLAG(J) = the number of new business incorporations lagged J months back in time.

[c] t-statistic reported in parenthesis are significant at ten (*), five (**), and one (***) percent levels.

SUMMARY AND CONCLUSIONS

This paper examines endogenous dependence in the business failure process for large and small businesses. After controlling for systemic growth, we use lagged business failures as an explanatory variable to explain the movement in business failures over time. We find the momentum in business failures from their cumulative lagged effect over time influences other distressed business to fail. The interdependence in the business failure process can be characterized as long memory of business failures that is present in both large and small business failures; however, the memory appears to be longer for smaller firms compared to large firms.

This paper extends Hambrick and D'Aveni's (1988) finding that large corporate bankruptcies progress as long downward spirals, by providing evidence of the final phase of organizational decline, the "death struggle". Hambrick and D'Aveni suggest this final phase occurs during the large firm's last two years of existence following a prolonged period declining performance and diminishing slack. Our results suggest a more precise empirically based timeframe for commencement of the death struggle. Specifically, for large businesses we find the counterbalancing influence of new business formations ceases to be very influential within the last sixteen months prior to failure and when new business formations can no longer stave off the forces of decline, the death struggle would appear to be at hand. For small businesses, we find the counterbalancing influence of new business formations ceases to be very influential within the last eight months prior to failure. The shorter death struggle for smaller firms is consistent with the process model for new small business failure developed by Venkataraman et al. (1990).

Once the death struggle begins for a large firm, the failure process becomes similar to catastrophic process described by Venkataraman et al. (1990) for small firms: slack is gone, working capital is depleted, and all that remains before the nails are put in the coffin is the failure of one important transaction. Our results suggest such an event can be concomitant failure of another firm with which the firm has a contractual relationship and that once a firm enters the death struggle, it must be very lucky to overcome endogenous dependence in the business failure process.

This study raises several issues for future bankruptcy research. First, our evidence indicates endogenous dependence should be included in an integrated theory of business failure for large and small firms; however, this study is only a first step in modeling functional relationships. Future research could investigate factors that systematically contaminate the model residuals' ability to capture endogenous dependence. Second, our evidence has implications for increasing the explanatory power of bankruptcy prediction models and identifying the determinants of business failure. Endogenous dependence is only one dimension of business failure. Future bankruptcy prediction models could incorporate exogenous dependence as an explanatory variable and investigate its interactions with other predictors, particularly other macroeconomic variables. Finally, although we find positive associations in the number of business failures and their monthly lags going back almost two years, it is difficult to completely rule out unknown growth factors as an alternative explanation for the results.

REFERENCES

Altman, E. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *Journal of Finance,* (September), 589-609.

Altman, E. (1971). *Corporate Bankruptcy in America.* Lexington, MA: Heath Lexington Books.

Altman, E. (1983). *Corporate Financial Distress*. New York: John Wiley & Sons.

Altman, E., R. Haldeman & P. Narayanan. (1977). Zeta analysis. *Journal of Banking and Finance* (June), 29-54.

Altman, E., R. Avery, R. Eisenbeis & J. Sinkey. (1981). *Application of classification techniques in business, banking, and finance.* Greenwich, CT: JAI Press

Beaver, W. (1966). Financial ratios as predictors of failure. *Journal of Accounting Research, 4*, 71-111.

Box, G. & G. Jenkins. (1976). *Time Series Analysis: Forecasting and Control*. San Francisco, CA: Holden-Day.

Carland, J., J. Carland & J. Carland. (2001). Fraud: A concomitant cause of small business failure. *The Entrepreneurial Executive, 6,* 75-112.

Carroll, E. & J. Delacroix. (1982). Organizational mortality in the newspaper industries in Argentina and Ireland: An ecological approach. *Administrative Science Quarterly, 27*, 169-198.

Casey, C. & N. Bartczak. (1985). Cash flow-It's not the bottom line. *Harvard Business Review* (July-August), 61-66.

Choudhury, A. (1994). Untransformed first observation problem in regression model with moving average process. *Communications in Statistics: Theory and Methods, 23*, 2927-2937.

Duchesneau, D. & W. Gartner. (1990). A profile of new venture success and failure in an emerging industry. *Journal of Business Venturing, 5*, 297-312.

Dunn and Bradstreet. (1998). *Business Failure Record.* New York, NY: Dunn and Bradstreet.

Edminster, R. (1972). An empirical test of financial ration analysis for small business failure prediction. *Journal of Financial and Quantitative Analysis*, (March), 249-262.

Frydman, H., E. Altman & D. Kao. (1985). Introducing recursive partitioning for financial classification: The case of financial distress. *Journal of Finance* (March), 269-291.

Hambrick, D. & L. Crozier. (1985). Stumblers and stars in the management of rapid growth. *Journal of Business Venturing, 1*, 31-45.

Hambrick, D. & R. D'Aveni. (1988). Large corporate failure as downward spirals. *Administrative Science Quarterly, 33*, 1-23.

Jones, F. (1987). Current techniques in bankruptcy prediction. *Journal of Accounting Literature, 6,* 131-164.

Lussier, R. (1996). A business success versus failure prediction model for service industries. *Journal of Business and Entrepreneurship, 8*, 23-37.

Olson, J. (1980). Financial ratios and the probabilistic prediction of bankruptcy. *Journal of Accounting Research, 18*, 109-131.

Perry, S. (2001). The relationship between written business plans and the failure of small businesses in the U.S. *Journal of Small Business Management, 39*, 201-208.

Platt, H. & M. Platt. (1990). Development of a class of stable predictive variables: The case of bankruptcy prediction. *Journal of Business, Finance & Accounting, 17*, 31-51.

Rose, P., W. Andrews & G. Giroux. (1982). Predicting business failure: A macroeconomic perspective. *Journal of Accounting, Auditing and Finance* (Fall), 20-31.

SAS/ETS User's Guide. (1988). SAS Institute, Inc, Cary, North Carolina.

Scott, J. (1981). The probability of bankruptcy: A comparison of empirical predictions and theoretical models. *Journal of Banking & Finance* (September), 317-344.

Venkataraman, S., A. Van de Ven, J. Buckeye & R. Hudson. (1990). Starting up in a turbulent environment: A process model of failure among firms with high customer dependence. *Journal of Business Venturing, 5*, 277-295.

Yrle, A., S. Hartman & A. Yrle-Fryou. (2001). Rate of business failures: An analysis of the determinants. *The Entrepreneurial Executive, 6*, 57-74.

Zavgren, C. (1983). The prediction of corporate failure: The state of the art. *Journal of Accounting Literature, 2*, 1-37.

Zmijewski, M. (1984). Methodological issues related to the estimation of financial distress prediction models. *Journal of Accounting Research* (22 Supplement), 59-82.