

## Business failures in the construction industry

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**Abstract** The objective of the research presented in this paper is to explore the factors associated with company failures in the context of the construction industry. To that end, the four quadrants of an 'environment/response' matrix developed by Boyle & Desai (1991, *Journal of Small Business Management*, 29, 33-42) are populated with Dun and Bradstreet's US business failure data for the construction industry. The study indicates that budgetary and macroeconomic issues represent 83% of the reasons for construction company failures. This implies that firms that take vigorous administrative measures to address budgeting issues and that react promptly to economic conditions by implementing appro-

priate strategic policies should be able to avoid failure. On the other hand, issues of adaptability to market conditions and business issues appear to have limited effects on company survivability (6% of the reasons for failure). This implies that administrative measures to fend off internal conflicts that originate for reasons beyond management's control and long-term strategic decisions to regulate the firm's adaptation to market conditions can also help to prevent failure. An 'input/output' model appears to explain the business failure phenomenon better than the 'environment/response' one.

**Keywords** bankruptcies, business failures, construction industry

### INTRODUCTION

Business failure information provides guidance to entrepreneurs who are contemplating starting a business. It gives a clear indication of the risk factors in the industry. It also provides experience for the professionals who are involved in managing risks. There are a number of individuals who have ultimately become successful business owners having failed in previous business ventures.

The subject of business failures is of interest to a number of researchers. Even so, theoretical developments in this area have been less sophisticated than those on the start-up of businesses and their subsequent growth (Storey 1994). A number of financial performance models have been developed over the past three decades to study business failures. Most of these models use financial ratios derived by a statistical search through a number of plausible financial indicators (Kangari *et al.* 1992). According to Kangari *et al.*'s (1992) literature survey, Beaver (1966) conducted the first modern statistical evaluation model, Altman (1968, 1971) generated a Z-score discriminate model and a Zeta model, and Edmister (1972) used multiple discriminant analysis to predict the financial failure of businesses. Argenti (1976) argued, however, that financial ratios can highlight some of the associated symptoms but are unable to identify the causes of failure. Furthermore, financial ratios may not be very reliable because of the 'creative accounting' practices

used by a failing company's management when attempting to hide the poor financial condition of the company from outside investors and creditors.

In construction, failure studies have focused on explaining failure at the project level (e.g. Hall 1982; Kharbanda & Stallworthy 1983; Morris & Hough 1987) rather than at the company level. Kangari (1988), Russell & Jaselskis (1992) and Abidali & Harris (1995) developed prediction models. Parallel research has been carried out in the UK (see e.g. Langford *et al.* 1993; Hall 1994; Hillebrandt *et al.* 1994; Hughes *et al.* 1998). The development of a theoretical framework that incorporates data based on both organizational and managerial foundations rather than on financial ratios is still open to researchers in the construction industry.

The objective of the research presented in this paper is to explore the factors associated with company failures in the context of the construction industry. It does not include the development of an empirical model for predicting business failure. Following a review of the general literature on business failure in the next section, the methodology of the study is described. The study involves the presentation and discussion of data for the 5-year period 1989-94 in the form of an 'environment response' matrix. The data in the matrix have been obtained from Dun and Bradstreet's (1989-93) statistics. Conclusions and recommendations are presented following a discussion of the factors

that cause business failures in the construction industry. Finally, an attempt is made to improve the explanation of the business failure phenomenon using an 'input/output' model.

## BUSINESS FAILURE

There are many definitions of failure. According to Frederikslust (1978), failure is the inability of a firm to pay its obligations when they are due. It mostly appears in a critical situation as a consequence of a sharp decline in sales, as a result of recession, the loss of an important customer, shortage of raw materials, deficiencies of management etc. Altman (1993) defined failure from the point of view of economic criteria. A company is considered to have failed if the realized rate of return on invested capital, with allowances for risk considerations, is significantly and continually lower than prevailing rates on similar investments. Another criterion is insufficient revenues to cover costs and situations where the average return on investment is below the firm's cost of capital. Baden-Fuller (1989) defined failure (Storey 1994) as a function of future events:

$$\pi = rC - C',$$

where  $\pi$  = present value of anticipated profit in the coming period,  $C$  = residual value of the plant if scrapped now,  $r$  = rate of interest, and  $C'$  = present value of anticipated capital gain in scrap value from deferring the closure.

On the other hand, Storey (1994) attached a pejorative connotation to the term failure, implying either that the business should never have been started in the first place, or that the person was not competent to do so, or that the business left behind significant unpaid debt. Watson & Everett (1993) attributed business failure to four different situations: discontinuance for any reason; ceasing to trade and creditor loss; sale to prevent further losses; and failure to make a go of it.

Failure is the outcome of a complex process and is rarely dependent on a single factor. Organization theorists from one school to another define the fate of a firm with different paradigms. Organizational ecologists (Hannan & Freeman 1977, 1984) favour environmental determinism and claim that the fate of a firm is determined by environmental selection forces. On the other hand, the strategic management school, which is grounded in the strategic choice model (Child 1972), emphasizes the importance of managerial decisions and actions in affecting the fate of firms. Hrebiniak & Joyce (1985) reconciled these views by acknowledging

the importance of the interaction between the environment and managerial decisions. In general, it is possible to summarize the phenomenon of failure as a function of two factors: environment-dependent factors and strategic leadership-dependent factors.

## METHODOLOGY OF THE STUDY

According to a study of turnaround strategies for small firms conducted by Boyle & Desai (1991), the causes of failure can be expressed in the form of an 'environment-response matrix distribution'. Figure 1 shows this matrix. The 'environment' is represented on the vertical axis and is divided into two categories, namely the internal environment, which represents the events that are under management's control, and the external environment, which corresponds to the events that are beyond management's control. Response is represented on the horizontal axis and is also divided into two categories, namely administrative responses, which represent the short-term operational activities, and the strategic responses, which represent the long-term planning of the firm. This four-cell matrix is adapted to the construction industry by using the factors used in Dun and Bradstreet's annual *Business Failure Records* (1989-93). Dun and Bradstreet provide historical data on business activities in the US. Business failure in their 1989-93 reports refers to 'a business that ceases operations following assignment or bankruptcy; ceases operations with losses to creditors after such actions as foreclosure or attachment; voluntarily withdraws leaving unpaid debts; is involved in court actions such as, receivership, reorganization or rearrangement; or has voluntarily compromised creditors'. Reported business failures do not include disclosures of business discontinuances without loss to creditors.

|             |                                                           |                                             |                                    |
|-------------|-----------------------------------------------------------|---------------------------------------------|------------------------------------|
| Environment | Internal:<br>events under<br>management<br>control        | CELL I                                      | CELL II                            |
|             | External:<br>events not<br>under<br>management<br>control | CELL III                                    | CELL IV                            |
|             |                                                           | Administrative<br>systems and<br>procedures | Strategic<br>long term<br>planning |
|             |                                                           | Response                                    |                                    |

Figure 1 Environment response matrix (Boyle & Desai 1991).

|             |                                               |                                                                                  |                                                               |
|-------------|-----------------------------------------------|----------------------------------------------------------------------------------|---------------------------------------------------------------|
| Environment | Internal: events under management control     | <b>CELL I</b><br>• BUDGETARY ISSUES<br>• HUMAN AND ORGANIZATIONAL CAPITAL ISSUES | <b>CELL II</b><br>• ISSUES OF ADAPTATION TO MARKET CONDITIONS |
|             | External: events not under management control | <b>CELL III</b><br>• BUSINESS ISSUES                                             | <b>CELL IV</b><br>• MACROECONOMIC ISSUES                      |
|             |                                               | Administrative systems and procedures                                            | Strategic long term planning                                  |
|             |                                               | Response                                                                         |                                                               |

Figure 2 Environment response matrix distribution with failure factors.

In the environment/response matrix (Fig. 2), Cell I, which covers the 'internal-administrative' factors, consists of budgetary and human capital issues. Cell II, which covers the 'internal-strategic' factors, represents issues of adaptation to market conditions including sales, competitiveness, growth and expansion. Cell III, which covers the 'external-administrative' factors, exposes business issues that cover the characteristics of the individuals who manage the companies, and business conflicts. Finally, Cell IV, which covers the 'external-strategic' factors, includes natural factors (the occurrence of natural disasters) and macroeconomic issues such as industry weakness and interest rates.

The issues in Fig. 2 are expanded using factors that define each issue. These factors are the very causes of failure whose percentages of occurrence in the construction industry are given by Dun and Bradstreet in their yearly reports. The percentages of occurrence of these factors over the 5-year period 1989–93 are calculated in Table 1. The rates of failure attributed to the factors are obtained from the annually published reports of Dun and Bradstreet in the period 1989–93 and are listed in columns 2–6. In the next five columns (7–11), the yearly rates of occurrence are multiplied by the general failure rate in the corresponding year, as given in Fig. 3. Column 12 is the sum of the values calculated in columns 7–11. Finally, the weighted rate of occurrence for each factor is calculated and presented in column 13 by dividing the individual values in column 12 by the sum of these values, given at the bottom of column 12 as 547.868. These factors and their corresponding rate of occurrence are then placed in the appropriate quadrant in the environment/response matrix in Fig. 4.

An alternative approach to explaining the reasons behind business failure in the construction industry is the classification of Dun and Bradstreet failure factors in the form of an input/output model (Fig. 5). In this

model, organizational and environmental factors influence a company's success or failure individually, jointly or indirectly through company performance factors. In other words, this model differentiates between the causes and the drivers of business failures. In the last section, an attempt is made to explain business failures in the construction industry in light of this model.

## INTERNAL-ADMINISTRATIVE FACTORS

### Budgetary issues

The models used in most of the theories of failure are based on financial data. It is generally believed that financial data constitute the most significant criteria in monitoring the performance of a firm and in predicting the trend of failure. However, some theorists, such as Argenti (1976), argue that financial values are open to manipulation and that creative accounting practices do not allow the managers, creditors or financial institutions to clearly assess the real performance of the firm. Argenti (1976) described the financial values as 'symptoms' of failure rather than 'causes'. Contrary to Argenti's description, Beaver (1966) developed a model based on four propositions: 'the larger the reservoir, the smaller the probability of failure; the larger the net liquid asset flow from the operation (i.e., cash flow), the smaller the probability of failure; the larger the expenditures for operations, the greater the probability of failure; the larger the amount of debt held, the greater the probability of failure' (Keasey & Watson 1991). On the other hand, the relationship between financial data and firm size is also discussed by Argenti (1976), Storey *et al.* (1987), Reid *et al.* (1993) and Storey (1994). According to these writers, small firms do not pay as much attention to financial ratios as do larger firms. This argument is explained first by the personal qualifications of the accountant: large firms have an accounting department that publishes financial reports on a regular basis and, therefore, financial ratios are easier to monitor whereas small firms hire private accountants. Furthermore, because of the dominance of the chief executive in small firms, financial data are much more open to manipulation.

According to the data presented in Fig. 4, 'insufficient profits', 'heavy operating expenses', 'insufficient capital', 'burdensome institutional debt' and 'receivable difficulties' constitute the budgetary issues. In this group, 'insufficient profits' leads with a rate of 26.71% and is followed by 'heavy operating expenses' with 17.80%. 'Insufficient profits' and 'heavy operating expenses' are related to the nature of the construction

Table 1 Calculation of weighted average values of failure factors

| Failure factors (1)                       | Rate of failure as a result of factor |          |          |          |          | (Rate of failure) x (industry failure rate) |          |          |           |           | Total (12) | Weighted % occurrence (13) |
|-------------------------------------------|---------------------------------------|----------|----------|----------|----------|---------------------------------------------|----------|----------|-----------|-----------|------------|----------------------------|
|                                           | 1989 (2)                              | 1990 (3) | 1991 (4) | 1992 (5) | 1993 (6) | 1989 (7)                                    | 1990 (8) | 1991 (9) | 1992 (10) | 1993 (11) |            |                            |
| Budgetary issues                          |                                       |          |          |          |          |                                             |          |          |           |           |            |                            |
| Insufficient profit                       | 15.9                                  | 14.5     | 36.6     | 43.3     | 14.6     | 13.674                                      | 13.195   | 47.744   | 55.857    | 15.914    | 146.384    | 26.71                      |
| Heavy operating expenses                  | 12.6                                  | 11.3     | 11.1     | 13.1     | 41.1     | 10.836                                      | 10.283   | 14.72    | 16.899    | 4.799     | 97.537     | 17.80                      |
| Insufficient capital                      | 19.4                                  | 21.6     | 2.8      | 1.9      | 3.3      | 16.684                                      | 19.656   | 3.072    | 2.451     | 3.597     | 45.46      | 8.29                       |
| Burdensome institutional debt             | 5.9                                   | 6.5      | 10.6     | 3.8      | 3        | 5.074                                       | 5.915    | 13.312   | 4.902     | 3.27      | 32.473     | 5.93                       |
| Receivable difficulties                   | 1.4                                   | 0.8      | 1.5      | 0.7      | 3        | 1.204                                       | 0.728    | 1.92     | 0.903     | 3.27      | 8.025      | 1.46                       |
| Human/organizational capital issues       |                                       |          |          |          |          |                                             |          |          |           |           |            |                            |
| Lack of business knowledge                | 12                                    | 11.5     | 0        | 0.4      | 0        | 10.32                                       | 10.465   | 0        | 0.516     | 0         | 21.301     | 3.89                       |
| Lack of managerial experience             | 2.9                                   | 0.6      | 1.1      | 0.2      | 0.5      | 2.494                                       | 0.546    | 1.152    | 0.258     | 0.545     | 4.995      | 0.91                       |
| Fraud                                     | 0.5                                   | 0.4      | 0.6      | 4.4      | 1.4      | 0.43                                        | 0.364    | 0.896    | 1.419     | 1.526     | 4.635      | 0.85                       |
| Lack of line experience                   | 2.9                                   | 0.8      | 0.2      | 0.2      | 0        | 2.494                                       | 0.728    | 0.256    | 0.258     | 0         | 3.736      | 0.68                       |
| Lack of commitment                        | 0.7                                   | 1.1      | 0.2      | 0.3      | 0.8      | 0.602                                       | 1.001    | 0.256    | 0.645     | 0.872     | 3.376      | 0.62                       |
| Poor working habit                        | 0.4                                   | 0.2      | 0.4      | 1.2      | 0.5      | 0.688                                       | 0.182    | 0.256    | 1.548     | 0.545     | 3.219      | 0.59                       |
| Issues of adaptation to market conditions |                                       |          |          |          |          |                                             |          |          |           |           |            |                            |
| Inadequate sales                          | 2.3                                   | 2.1      | 2        | 2.5      | 2.2      | 1.978                                       | 1.911    | 2.56     | 3.225     | 2.398     | 12.072     | 2.20                       |
| Not competitive                           | 0.9                                   | 0.4      | 0        | 0.1      | 0.3      | 0.774                                       | 0.364    | 0        | 0.129     | 0.327     | 1.594      | 0.29                       |
| Overexpansion                             | 0.2                                   | 0.4      | 0        | 0.2      | 0        | 0.172                                       | 0.364    | 0        | 0.258     | 0         | 0.794      | 0.15                       |
| Business issues                           |                                       |          |          |          |          |                                             |          |          |           |           |            |                            |
| Business conflicts                        | 1.1                                   | 1.3      | 2        | 1.9      | 3.3      | 0.946                                       | 1.183    | 2.56     | 5.031     | 3.597     | 13.317     | 2.43                       |
| Family problems                           | 1.1                                   | 0.8      | 0.4      | 0.5      | 1.6      | 0.946                                       | 0.728    | 0.512    | 0.241     | 1.744     | 6.381      | 1.16                       |
| Macroeconomic issues                      |                                       |          |          |          |          |                                             |          |          |           |           |            |                            |
| Industry weakness                         | 17.7                                  | 23.7     | 27.8     | 24       | 19.5     | 15.222                                      | 21.567   | 35.584   | 30.96     | 21.255    | 124.588    | 22.73                      |
| Poor growth prospects                     | 0.4                                   | 0.6      | 0.4      | 0.1      | 0        | 0.344                                       | 0.546    | 0.512    | 0.129     | 0         | 1.531      | 0.28                       |
| High interest rate                        | 0                                     | 0.2      | 0        | 0.1      | 0        | 0                                           | 0.182    | 0        | 0.129     | 0         | 0.311      | 0.06                       |
| Natural factors                           |                                       |          |          |          |          |                                             |          |          |           |           |            |                            |
| Disasters                                 | 1.2                                   | 1.1      | 2.2      | 4.4      | 4.9      | 1.032                                       | 1.274    | 2.816    | 5.676     | 5.341     | 16.139     | 2.94                       |
| Total                                     |                                       |          |          |          |          |                                             |          |          |           |           | 547.868    | 100.00                     |

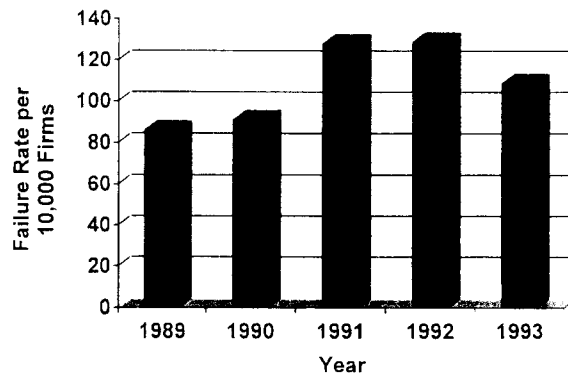


Figure 3 Industry failure rates by year.

business, which is characterized by one-off and custom-made production and by traditionally low profit margins. Low profit margins are primarily the result of the harsh competitive environment of the bidding process, the pervasive culture of claims and counter-claims during the construction process, and the fact that bids are based on estimates of quantities, productivities and unit costs that are generally far from being accurate. The danger of 'insufficient profits' constantly looms over contractors in this environment, especially when the

company lacks integration with the market and is deficient in estimating its true abilities. 'Heavy operating expenses' become particularly burdensome when construction companies need to shrink and expand in cycle with the job market and competitive conditions. Larger firms are expected to have higher survivability because of their wider range of production, which balances the variations in operating expenses and the already small profits. Having mentioned all of these factors that are external to the firm as the reasons why these five budgetary issues create problems, it should also be noted that firms can overcome these problems by establishing and implementing sound and well thought out policies to set bidding strategies, specify mark-ups, control overheads and costs, regulate borrowing, select subcontractors etc. These are measures that firms can take internally in response to potential budgetary problems.

'Insufficient capital' and 'burdensome institutional debt' can partly be explained by both the age and the size of the firm. Large and long-established firms have a better chance of being supported by financial institutions and may have fewer capital, cash flow and payment problems in comparison with small and young firms. 'Heavy operating expenses', 'insufficient capital' and 'burdensome institutional debt' can also be explained by the cash flow conditions of construction companies, where the typical procedure involves periodic payments (usually on a monthly basis) by the owner for work that has been carried out and financed by the contractor. Furthermore, a certain percentage of these payments (usually 10%) is retained by the owner against potential defects and omissions. This procedure implies that construction companies are not able to recover their expenses, let alone realize any profits, until the entire construction is completed and the accumulated retainage is recovered. The consistently negative cash flow over the course of the construction process is likely to increase the likelihood of construction company failure through unrecovered 'heavy operating expenses', 'insufficient capital' to finance work through the entire construction, and 'burdensome institutional debt' to third parties from whom funds are borrowed to compensate for the negative cash flow.

#### Human/organizational capital issues

These issues include 'lack of business knowledge', 'lack of managerial experience', 'fraud', 'lack of line experience', 'lack of commitment' and 'poor working habits' and constitute 7.54% of the overall failure factors (Fig. 4).

| Environment | Internal: Event under management control | CELL I                                     | CELL II                                          |
|-------------|------------------------------------------|--------------------------------------------|--------------------------------------------------|
|             |                                          | Weighted (%) Occurrence                    | Weighted (%) Occurrence                          |
|             |                                          | <b>BUDGETARY ISSUES</b>                    | <b>ISSUES OF ADAPTATION TO MARKET CONDITIONS</b> |
|             |                                          | Insufficient profits ..... 26.71           | Inadequate sales ..... 2.20                      |
|             |                                          | Heavy operating expenses ..... 17.80       | Not competitive ..... 0.29                       |
|             |                                          | Insufficient capital ..... 8.29            | Overexpansion ..... 0.15                         |
|             |                                          | Burdensome institutional debt ..... 5.93   |                                                  |
|             |                                          | Receivable difficulties ..... 1.46         |                                                  |
|             |                                          | <b>TOTAL: 67.73</b>                        | <b>TOTAL: 2.64</b>                               |
|             |                                          |                                            |                                                  |
|             |                                          | <b>HUMAN/ORGANIZATIONAL CAPITAL ISSUES</b> |                                                  |
|             |                                          | Lack of business knowledge ..... 3.89      |                                                  |
|             |                                          | Lack of managerial experience ..... 0.91   |                                                  |
|             |                                          | Fraud ..... 0.85                           |                                                  |
|             |                                          | Lack of line experience ..... 0.68         |                                                  |
|             |                                          | Lack of commitment ..... 0.62              |                                                  |
|             |                                          | Poor working habits ..... 0.59             |                                                  |
|             |                                          | <b>TOTAL: 3.59</b>                         | <b>TOTAL: 26.01</b>                              |
|             |                                          | <b>BUSINESS ISSUES</b>                     | <b>MACROECONOMIC ISSUES</b>                      |
|             |                                          | Business conflicts ..... 2.43              | Industry weakness ..... 22.73                    |
|             |                                          | Family problems ..... 1.16                 | Poor growth prospect ..... 0.28                  |
|             |                                          |                                            | High interest rates ..... 0.06                   |
|             |                                          |                                            | <b>NATURAL FACTORS</b>                           |
|             |                                          |                                            | Disaster ..... 2.94                              |
|             |                                          |                                            |                                                  |
|             |                                          |                                            |                                                  |
|             |                                          | Administrative systems and procedures      | Strategic long term planning                     |
|             |                                          | Response                                   |                                                  |

Figure 4 Environment:response matrix distribution with failure factors for the 5-year period 1989-93.

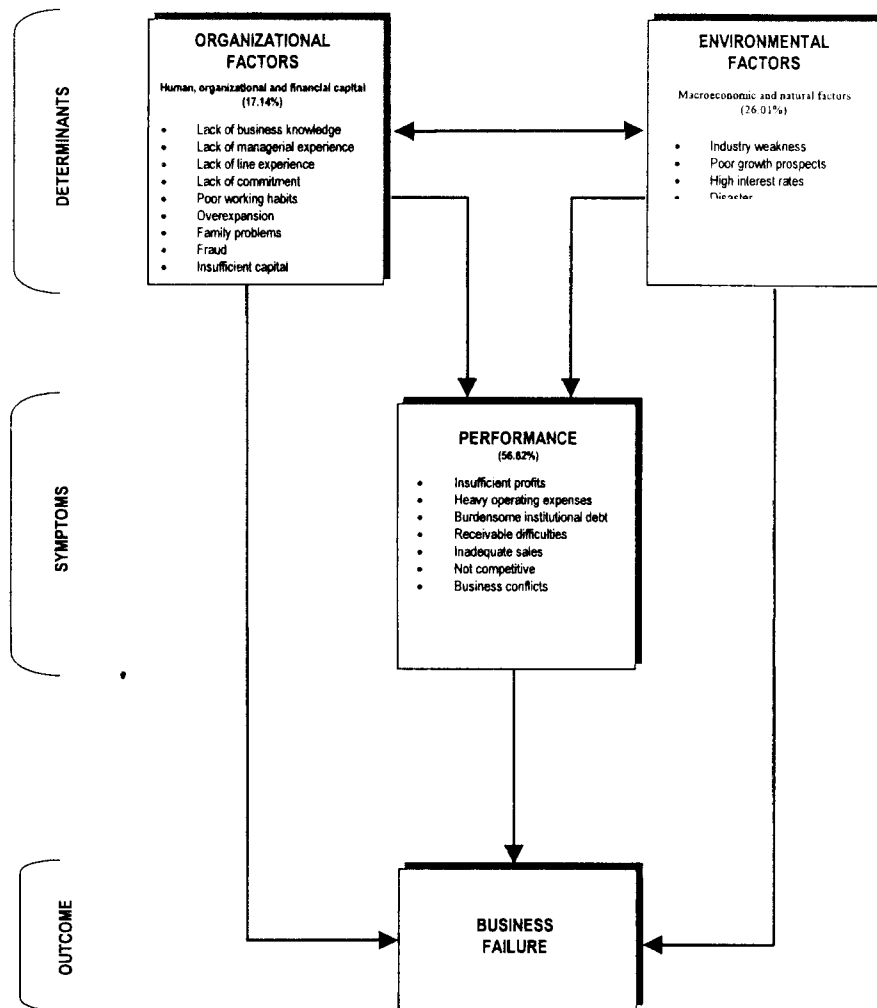


Figure 5 Input/output model of business failure in the construction industry.

The factors 'lack of business knowledge', 'lack of managerial experience' and 'lack of line experience', which constitute three of the top human/organizational capital issues affecting business failures, can be explained by referring to *learning* theories. Cohen (1996) explained that organizational learning shapes organizational structure by acquiring information about the state of the world and by improving what the organization can do. In theory, psychologists are more focused on the individuals' learning whereas organizational theorists are more focused on organizational structure and context. In this respect, the environmental ecology and organizational adaptation paradigms have driven different perspectives. In the environmental ecology approach, it is suggested that there is a relationship between organizational survivability and the age of an individual organization. This relationship is explained by two basic properties of organizational learning

(Hannan & Freeman 1984). The first one is the accumulation of knowledge and skills as the organization ages, and the second is the increasing reliability and consistency of organizational behaviour over time. On the other hand, in the adaptationist approach, organizational learning not only consists of gaining competence in certain activities, routines, technologies or goals but also involves a process that is characterized by the search for and exploration of alternative routines, technologies and goals based on the realization that certain competencies can no longer meet the previously set targets (March, 1991).

'Lack of business knowledge' can be expanded to mean lack of in-depth industry knowledge, market savvy, and a certain practical knowledge of how to find and attract clients, suppliers and distributors. Dun and Bradstreet's (1989–93) survey of small business owners shows that 'owners believe the necessary expertise

is acquired through a combination of formal and continual study, and on-the-job experience'. Organizational learning allows a construction company to identify the profitable markets, to forge partnering alliances with suppliers and subcontractors, to take advantage of technological innovations, and to establish good relationships with financial institutions, surety companies and potential owners. In particular, smaller start-up construction companies are vulnerable in this respect because the people who start the company may have the technical know-how to complete a construction project but, in all likelihood, lack the business knowledge to ensure the survival of their company.

'Lack of managerial experience' is described by Argenti (1976) as being caused by one-man rule, a non-participating board, an unbalanced top team, lack of management depth, weak finance function, and a combined chairman–chief executive. One-man rule is rather valid for small firms. In small firms, the chief executive dominates the firm and, rather than acting as a leader, may allow less discussion and be quite closed to advice. In small firms, the chief executive may also double as the chief estimator and project manager; a chief executive who is overly involved in the day-to-day operational activities may fail to formulate mid- and long-term strategies for the future growth of the company. A non-participating board is composed of passive board members and normally fails to direct and guide the firm in its short- and long-term policies. Lack of management depth and weak finance functions are also characteristics of non-participating boards. Argenti (1976) observed that the 'unbalanced top team' phenomenon occurs in engineering companies where not only is the chief executive an engineer but so are most of the board members. He considered this situation a handicap in challenging subordinates. The composition of the board and its leadership structure form the two main components of the strategic leadership approach. The composition of the board may affect a director's ability to provide advice and counsel to the chief executive officer (CEO) and to influence organizational performance (Daily 1995). The existence of outsider directors on the board may generate a higher degree of objectivity and monitoring of organizational performance. According to Daily's (1995) research, successful reorganizations are characterized by a board that is 65% outsider dominated. The same research showed that failed firms have a majority of inside directors serving on their board.

Another reason for failure under human/organizational capital issues—'lack of line experience'—can be

explained as failure caused by lack of production experience. In the context of the construction industry, the failure of a firm may be considered to be dependent on the failure of one or more of its projects. Many theoretical and empirical research studies have been conducted to determine both the critical success and the failure factors in projects (e.g. Russell & Jaselskis 1992; Bellasi & Tukul 1996; Fleming & Koppelman 1996). However, it is difficult to define the project's success or failure because the parties who are involved in the project may have different perceptions of the outcome. A project that is considered to be a success by the owner may be considered to be a failure by the contractor. On the other hand, the critical factors may vary according to the characteristics of the project. Bellasi & Tukul (1996) defined the critical factors in four main groups: factors related to the project; the project manager and the team members; the organization; and the external environment. Bellasi & Tukul (1996) conducted surveys in which they identified top management's support, availability of resources, the project managers' managerial skills, the team members' commitment and their technical background as the critical factors in project performance. They also noted the importance of the size and value of the project, the uniqueness of the activities, the density of a project network, the project lifecycle and the urgency of the project outcome. The importance of project size and duration is also supported by Russell & Jaselskis's (1992) research.

'Fraud' follows 'lack of managerial experience', with 0.85% in this category (Fig. 1). Fraud is defined as a false representation of the facts by one party of the contract to the other party. The presence of fraud in a contract is usually grounds for voiding the contract and making it unenforceable. Fraud action constitutes a reckless or intentional misstatement of a material fact, made with intent to deceive, resulting in the misleading of the innocent party to his detriment. Therefore, to bring about an allegation of fraud, the plaintiff must prove that the defendant made a false statement of fact, showed a reckless or intentional disregard for the truth, intended to induce reliance by the plaintiff, and such damage was the consequence of this reliance (Dunham *et al.* 1986). This is a very involved and difficult process.

'Lack of commitment', the fifth factor under human/organizational capital issues, can be defined as the level of excitement, enthusiasm and emotion of the management team. Adizes (1988) emphasized the importance of commitment at the early stages of an organization. According to his argument, infant orga-

nizations (which are at the beginning of their lifecycle) usually operate in the red and this makes them action-oriented, opportunity-driven, highly responsive and flexible. Therefore, building a high level of commitment at this stage is a key to keeping the company alive. If the commitment is not substantial, the organization will break up at the first sign of rough times. At this stage, Adizes (1988) also stressed the importance of the commitment of the company's founder. In their first years, organizations are highly dependent on their leaders/founders; the leader's commitment is one of the factors that will keep the company growing. However, at the mature stages, a leader's commitment can create a barrier for the organization's transformation in response to the new conditions and environment.

## INTERNAL-STRATEGIC FACTORS

### Issues of adaptation to market conditions

These issues consist of 'inadequate sales', 'not competitive' and 'overexpansion' (Fig. 4). Adaptationist researchers share the common view that strategic planning is one of the most important factors that can increase a firm's adaptation capability to the environment. This is because strategic planning regulates the extraction and use of resources for the purpose of optimizing sales, competitiveness and expansion. Designing the strategy is collinear with knowledge and understanding of the environment by the organizational participants. Interaction between the organization and the environment can be considered as a function of the kind of industry and time. Indeed, the three factors considered to be part of the adaptation issues, namely 'sales', 'competitiveness' and 'expansion', are very industry-specific phenomena and are subject to changes over time. For example, 'sales' and 'competition' in the construction industry are based on lowest bids as opposed to off-the-shelf purchasing in manufacturing industries; 'expansion' in the construction industry is project-based whereas it is generally product-based in manufacturing industries.

Among issues of adaptation to market conditions, 'inadequate sales' leads the group with 2.20% (Fig. 1). Because the construction industry realizes its production on a project basis, performance in 'sales' can be evaluated by assessing a company's success in bidding. A high rate of award in bidding will assure continued production and growth for the construction company. According to Drew & Skitmore (1997), the two methods that will help secure contracts are consistently bidding for specific types of construction work and being inconsistently competitive, and having high bidding variability.

'Inadequate sales' is a particularly important issue in the residential building industry. Most housing produced by a private developer carries high uncertainty as to whether it will be sold or rented. The sheer size of the purchase of either a house or an apartment and the fact that it is a postponable investment renders speculative housing production risky (Hillebrandt 1985). General economic conditions, alternative investment methods, location, design and quality are the factors affecting the level of demand in this industry.

Another adaptation issue is a firm's 'competitiveness'. According to the principle of competitive exclusion, no two species can coexist that make their living in an identical way in an environment that is characterized by high competition and scarce resources (Henderson 1991). A firm must be different enough to have a unique advantage over its competitors, especially in a tough market. The continued existence of a number of competitors is proof *per se* that their advantages over each other are mutually exclusive. According to Lowes *et al.* (1994), competitiveness may be defined as the ability to meet and beat rivals in supplying a product on a sustainable (i.e. long-term) and viable (i.e. profitable) basis. Their argument on the nature and intensity of competitive relationships in a market depends on various factors such as product and buyer characteristics, the extent of market concentration, and cost and demand considerations. Porter (1991) explained that the state of competition in an industry is dependent on five basic forces: threat of new entrants; bargaining power of suppliers; bargaining power of customers; threat of substitute products or services; and jockeying for position among current competitors. Knowledge of these underlying sources of competitive pressure provides the groundwork for a strategic agenda of action. For example, smaller contractors should be aware of the fact that they have a weak bargaining position with respect to suppliers, surety companies and owners. They should also be aware that some of the tougher competition will come from young, innovative and aggressive companies because entry barriers to the construction industry are minimal. In light of Porter's (1991) model, contractors should be cognizant of these factors in setting their long-term strategies. As such, they should either be as efficient as possible or they should position themselves to offer services that are as distinctive as possible.

Globalization, privatization and the reduction of trade barriers increase competition. For example, the share of US construction companies in the international market declined consistently after the 1970s as a result of competition from other countries (Arditi & Gutierrez 1991). Owners are also becoming more aware of the nature of construction and are tending to be more

discerning. The Business Roundtable, an organization of large industrial construction owners, commissioned in the mid-1980s an extensive research study into why construction costs more than it is actually worth. The resulting *Construction Industry Cost Effectiveness (CICE) Reports* critically examine every facet of the construction process and make explicit recommendations to the participants of the construction activity (The Business Roundtable 1983). Quality awareness, efficient project management, smooth labour relations, effective training in latest technologies, adherence to construction regulations (e.g. particularly safety), and access to complex procurement systems (e.g. build-operate-transfer (BOT)) are factors that contractors need to be familiar with in order to keep their competitive edge. Furthermore, construction practitioners are under threat from organizations in other fields of activity who are offering construction-related consulting services for which construction practitioners lack the relevant expertise or which, while being part of their traditional activities, they do not perform satisfactorily (Betts & Ofori 1994). All of this dynamism in the construction environment forces contractors to frequently adjust their outlook in order to remain competitive. As a result, it is much harder to create long-term strategic plans in construction; it is more common to generate short- and mid-term strategies.

'Overexpansion' can drive a company to higher risk-investments with financial debt, hence increasing its chances of failure. For a construction contractor, over-expansion can either mean that too many projects that the company cannot afford, both organizationally and financially, are being undertaken or that he/she is employing too many employees and owns too much equipment, none of which the company is capable of financing. Partnering with subcontractors or entering into joint ventures with other contractors may enrich a company's portfolio but it can also jeopardize its survival because, in such business ventures, the company loses its absolute control over the schedule, quality and cost of the operations. Expansion into new markets, such as projects in other states or other countries, and seeking different niches, such as shifting from residential to civil construction without the right preparation, may also carry unusually high risks.

## EXTERNAL-ADMINISTRATIVE FACTORS

### Business issues

These issues consist of 'business conflict' and 'family problems', which constitute 3.59% of the overall failure factors (Fig. 1).

The term 'conflict' can be defined as: (1) any divergence of interests, objectives or priorities between individuals, groups or organizations; or (2) non-conformance to requirements of a task, activity or process (Gardiner & Simmons 1995). March & Simon's (1993) definition for 'conflict' in organizations is a breakdown in the standard mechanism of decision-making so that an individual or group experiences difficulty in selecting an action alternative. Conflict can arise in five different situations (Hardy 1983): the overlap of formal objectives; ambiguity in role definitions; the fuzziness of contractual relationships; multiplicity of roles assumed by some parties; and hidden objectives. Conflict has the potential to destroy both quality and technical performance. According to March & Simon (1993), abatement of conflict depends on the availability of bland alternatives, amount of time pressure, search for clarification, search for new alternatives, amount of past experience, complexity of decision and, finally, munificence of the environment. Some degree of conflict in an organization is not only inevitable but is also desirable because conflict is both a cause and an effect of change.

Business conflicts occur rather more frequently in the construction industry than in other industries because of the fragmented nature of its organization, the ambiguity in contract language, the uncertainty in site operations, the adversarial relationships among the parties involved, and the traditionally low profit margins. At the project level, conflict can occur at the inception, design, bidding and construction phases. Gardiner & Simmons's (1995) research into conflict and change in the construction industry showed that the greatest number of conflicts occur in organizational systems, and quality and control issues, while on a single project level, they occur in the design stage. Given the nature of the construction industry and the complex interrelationships between organizations, it is hard to eliminate conflicts totally. Kumaraswamy (1998) conducted an extensive review of conflicts, claims and disputes in the construction industry in the US, the UK, Australia and Hong Kong. He argued that while the healthy reconciliation of constructive conflict can lead to synergistic scenarios that optimize designs, construction methods and other operations, management should anticipate, discourage and diffuse destructive conflict, which has debilitating consequences. A firm should always be prepared for conflicts.

'Family problems' in this category represents long-term injuries, fatalities, divorce etc. taking place in the family of the person(s) playing a major role in the running of the company. This factor has a weighted

rate of 1.16% (Fig. 4). Many studies have been conducted to explore the characteristics of the chief executive, leadership styles and human resources (e.g. Argenti 1976, 1993; Hoffman *et al.* 1987; Storey *et al.* 1987; Galbraith 1993; March and Simon 1993). An individual's characteristics can be explained by referring to their work history, family background, personal characteristics and education (Storey 1994). These characteristics have either positive or negative effects on survivability. On the other hand, it is also argued that these characteristics have a greater effect on small firms' survivability because of the great power of the CEO on the smaller organization.

## EXTERNAL-STRATEGIC FACTORS

### Macroeconomic issues

According to the information in Fig. 4, 'industry weakness' (22.73%) is the second most important factor after 'insufficient profits' (26.71%) in causing business failures. Industry conditions play a vital role in the failure or success of companies. Business failures are caused by industry weakness but tend to decrease with the rise in economic conditions. 'Poor growth prospects' (0.28%) and 'high interest rates' (0.06%) follow 'industry weakness' in this category.

It is a well-known fact that the construction industry is influenced by general macroeconomic trends. It is an important part of the national economy because it provides predominantly investment goods, is large and is composed of a large number of participants including contractors, owners, consultants, suppliers etc. No construction company has significant market share and, therefore, no company can have a dominant influence on the market. On the other hand, while the large majority of construction companies are small- and medium-sized, the major portion of work is carried out by larger companies.

The construction industry is a volatile industry that is characterized by market ups and downs. Construction investments follow a cyclic pattern that is heavily influenced by business conditions, interest rates and growth prospects. Platt & Platt (1994) suggested that the cyclic nature of the economy may provoke business failures. In times of recession, construction demand is reduced and fuels fierce competition among contractors; this situation forces contractors to submit unrealistically low bids or to bid for projects that are beyond their specialty or competence, which in turn causes many of them to go out of business.

Governments use the construction industry as a regulator of the economy. One of the first studies to

document the consequences of this practice is a White Paper submitted by Sir Harold Emerson in 1962 in the UK (Emerson 1962). This argument is supported by several studies in various countries (Hillebrandt 1985; Pheng 1995; Libaw 1997). Therefore, in economic crises or recession periods, the government policies aimed to adjust construction demand will directly affect the construction industry. However, according to Hillebrandt (1985), unless the government can foresee problems very far in advance, the effect will be too slow to be useful at the beginning of the crisis period and the major effect will come much later, perhaps at a time when the contrary effect is clearly required. The common consensus is that decreasing the reliance on government spending and pushing for more private investment will make the industry more efficient, technologically advanced and competitive in the global marketplace.

### Natural factors

The final factor in the external-strategic cell represents acts of God, such as natural disasters. Although, as is seen in Fig. 4, disasters do not play a major role in business failures in the construction industry, they may have much effect at the project level. Construction firms should, therefore, be prepared for possible natural disasters and have emergency plans in place.

## AN ALTERNATIVE APPROACH: THE INPUT/OUTPUT MODEL

An alternative to Boyle & Desai's (1991) 'environment/response' matrix approach in understanding the phenomenon of business failure is an approach that considers failure as a process rather than solely as an outcome. The input/output model of organizations postulates that an organization is continuously involved in transforming inputs into outputs and, as such, differentiates between the causes and drivers of business failures. Boyle & Desai's (1991) four-quadrant approach, in comparison, considers all factors as causes of business failures. An attempt is made to explain the occurrence of business failures in the construction industry in light of the input/output model presented in Fig. 5.

The survival of an organization depends on receiving inputs from the environment and on efficiently and effectively transforming these inputs into outputs. The efficient and effective transformation of inputs into outputs is influenced by *organizational factors* such as the strategic choices made by an organization, the

individual characteristics of the persons who make these strategic choices, and the context (i.e. age and size of an organization) in which these strategic decisions are made and implemented. These human, organizational and financial decisions individually or jointly influence the outcome of the transformation process and, hence, the success or failure of an organization. The share of the impact organizational factors on business failures is 17.14%, based on Dun and Bradstreet's data (Fig. 5). The proportion of direct versus indirect (through their effect on performance) impact on business failure is difficult to determine given the nature of the data at hand.

The *environmental factors*, on the other hand, include the source of the resources (e.g. capital, material, labour, demand for outputs etc.). An organization depends on the smooth flow of these resources for survival and prosperity. Macroeconomic factors and natural events significantly influence the flow of these resources into an organization; their share of the impact on business failures is 26.01%, based on Dun and Bradstreet's data (Fig. 5). Again, however, it is difficult to determine the proportion of their direct versus indirect (through their effect on performance) impact on business failure because of the nature of the data at hand. However, the input/output model dictates that the organizational and environmental factors either solely or jointly influence an organization's performance to some extent, and that the organization's performance, in turn, leads to either the success or the failure of the organization.

An organization's *performance* is commonly assessed by different criteria such as profitability, growth in sales, competitiveness etc. Dun and Bradstreet (1989–93) is one of the most important sources of information on business failures; however, its business failure reports do not differentiate between driving factors (i.e. organizational and environmental factors) and an organization's performance criteria (i.e. profitability, competitiveness, sales, growth etc.). Their annual business failure reports are routinely used for exploring factors underlying business failures and, hence, for gaining insights into processes that lead to business failures. However, one should be cognizant of the fact that the organizational and environmental factors are the driving forces that directly impact the performance of an organization, which in turn leads to either success or failure (Fig. 5).

## CONCLUSION

The causes of failure are expressed in the form of an

'environment/response' matrix and the factors that are identified by Dun and Bradstreet are used to populate its four quadrants. It is found that the most important reasons for business failures in the construction industry in the 5-year period (1989–93) are to be found in the internal-administrative and external-strategic quadrants. The internal-administrative quadrant covers budgetary issues and human capital issues whereas the external-strategic quadrant covers macroeconomic issues and natural disasters. These two quadrants represent 67.73% and 25.73%, respectively, of all reasons for failure. Whereas internal-administrative issues are short-term issues that can be handled by management, external-strategic issues are long-term planning issues that are beyond management control.

Over 80% of the failures were caused by five factors, namely 'insufficient profits' (26.71%), 'industry weakness' (22.73%), 'heavy operating expenses' (17.80%), 'insufficient capital' (8.29%) and 'burdensome institutional debt' (5.93%). All of these factors, except 'industry weakness', are budgetary issues and can, therefore, be handled by companies that are cognizant of the effects of these factors on their survivability. It appears that, in addition to the strategic leadership factors such as budgetary issues, environmental factors, particularly 'industry weakness' (22.73%), which are beyond a company's sphere of immediate action, are among the most important determinants of business failure in the construction industry. This finding should, however, be interpreted in light of the fact that the cause–effect relationship between environmental and strategic leadership factors is not well established.

An attempt to explain the occurrence of business failures in the construction industry by using an input output model suggests that organizational and environmental factors are the driving forces that impact the performance of an organization. These factors appear to individually, jointly or indirectly (through their impact on company performance) influence either the success or the failure of construction companies.

Failure rates and reasons are clearly time-dependent. In most cases, the impact of company performance on business failure is not immediately apparent, but is so following some time lag. Further research could compare a number of 5-year periods—say 1989–94, 1994–99—to better understand the effect of time on business failures in construction. It should be noted that the categories used by Dun and Bradstreet prior to 1989 are different to the categories used thereafter, making it impossible to make a one-on-one comparison of post- and pre-1989 data.

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