CHAPTER 3

METHODOLOGY

As turnaround management involves heroic actions, they are being written about in business magazines and publications. Hence, there was no dearth of secondary materials on turnaround strategies. This is, indeed, a great opportunity for researchers on the subject. The present researchers therefore decided to scan the published cases on turnaround management, which turned out to be very productive. We managed to assemble 68 successful cases (45 private and 23 public) and 34 unsuccessful cases (22 private and 12 public), which belonged to a twelve-year period between 1998 and 2010. These were content-analysed to generate quantitative data, which were then statistically processed for testing the above-mentioned hypotheses. The steps in this process were as follows:

3.1. Preliminary reading of the cases in order to identify the commonly observed causes of sickness and strategies of turnaround.

Sample

A sample size of 110 (102 case surveyed + 8 cases developed) companies which failed during the twelve year period 1998-2010 from public and private sector organizations in India was taken. Out of which 68 Indian companies which failed and successfully turnaround was studied. Of which 23 were public sectors companies and 45 were private sector companies and the remaining 33 Indian companies were unsuccessful in their turnarounds. In addition, 35 Indian companies which are unsuccessful were also studied, out of which 12 were public sector companies and 23 were private sector companies. The criterion for including a case in the sample was the following rule of thumb: the case should have been such that they should have turned around during 1998-2009. In addition, the causes of industrial sickness should have been internal or external and the turnaround strategies was from the functional aspects like marketing, human resources, finance, operations/production and also other general strategies. Initially, it was proposed to restrict the study to successful turnarounds in India. Later, to get an overall picture it was found appropriate that unsuccessful turnarounds were also studied.
Sources of data collection

The data was collected from published case studies and PROWESS database during the period 1999-2009. Most of these were published in Business India under Corporate reports column during 1998-2009. A few stories were from Business World. A list of cases used for the study is given in Appendix I. The constructs in the areas of study are deduced from the cases of all the companies included in the sample.

3.2. Listing of the major causes and strategies as well as classifying causes into internal and external, and strategies into the various functional areas of management (namely, human resources, finance, marketing, production/operations and corporate planning). Initially, there were 120 variables belonging to these two major categories (41 of them among causes and 79 among strategies).

These variables were judgmentally combined into 36 causal variables and 30 strategy variables (by combining major functional area strategies together), which were then used for ratings and subsequent analysis. The causes of sickness are divided into internal and external causes.

Internal causes – The various internal cause variables were ambitious expansion, High cost of debt due to escalation of project, slow initial growth, Poor financial structure, poor marketing strategy, incompetent management, obsolete technology, high operating cost, high nonperforming assets (NPA’s), Inadequate capital, operating inefficiencies, large investment in new product line, inefficient workers, poor market demand, Low quality production, low capacity utilization, Low turnover/sales, drop in exports, fall in share prices, delay in projects excessive employees, huge stock of inventory, low employee morale, high employee cost, lack of liquidity, improper utilization of funds, lack of market orientation.

External causes – The various external cause variables were high input cost, dumping from overseas market, competitive advantage, high interest cost, Market recession and lack of demand, Government Constraints, Changes in the needs and demands of the customer, Foreign exchange fluctuations and weakening of rupee, Stagnant price of the Product.
Turnaround strategies based on functional classification are:

**Turnaround Marketing strategies**- Innovative Marketing Strategies, reassessment of product mix, transition from seller market to buyers market, focus on core markets, entering newer markets, focus on promotional activities, aggressive pricing, entering newer markets.

**Turnaround Financial strategies**- The various turnaround financial strategies variables were Debt restructuring, Reduction in cost of assets, efficiency in short term financing, Infusion of funds, Cost cutting, Cost of reduction of funds

**Turnaround Human resource strategies**- The various turnaround human resources strategies variables were Huge retrenchment, employee training, Change in the top management, Incentives to employees, Motivating employees, Culture building, Employee involvement, information dissemination

**Turnaround Production strategies**- The various turnaround production strategies variables were Efficiency measures for operations, Investment in R&D, reduction in the cost of raw materials, modernisation, Technical collaboration, Improvement in process

**Turnaround Corporate Planning strategies**- The various turnaround other strategies variables were Corporate social responsibility, restructure the organisation

3.3. Generating quantitative data on causes and strategies by using a quasi-interval scale ranging from 1 to 3 (‘1’ indicating the absence, ‘2’ indicating doubtfulness, and ‘3’ indicating presence of a particular cause/strategy)

**Data collection tools**

A rough draft of above 120 questions in the questionnaire was prepared in consultation with experts and people in the field. The draft copies were further given to experts in the management field for validation. Based on the suggestions the draft copy has been refined and then it was
administered to a smaller group as a part of pilot study. Based on the response of the same, it was refined. Finally, the refined questionnaire consisted of 120 questions with three point scale of yes, no and doubtful.

The questionnaire schedule (Appendix 6) contained the list of causes of industrial sickness both external and internal. For smooth administration of the questionnaire, the whole questionnaire was divided in to four sections. Part I dealt with the background information. Part II of the questionnaire dealt with the causes of sickness-both internal and external. Part III of the questionnaire dealt with the various turnaround strategies which were marketing, finance, human resource, production/operations and others which were general strategies. The questionnaire was dichotomous in nature, where the presence or absence of a cause of sickness and presence and absence of turnaround strategies were identified.

3.4. Finding the inter-rater agreement on the above rating by soliciting the help of two other raters, (one a PhD in Economics, and the other a PhD in Sociology), for their independent ratings of the same variables on the same scale. It was found that the inter-rater agreements (as computed by correlations) were fairly high at 0.904 (between the researcher and rater-1), and at 0.855 (between the researcher and rater-2). Hence, it was concluded that the researcher’s ratings were fairly unbiased.

Generating information from secondary sources may form unusual problems for the researcher, mainly of reliability and validity. The matter in the published cases was apparently collected for a dissimilar purpose, and so may not include all the information required by ensuing researcher. Likewise, in the case survey method, the researcher assumes the task of the respondent, and does the rating on his behalf. There may also be difficulties of scaling, sample bias, etc. These problems were anticipated, and certain precautions were taken to reduce their effect on the findings of the study.

Reliability- The major basis of reliability problems in the technique of data collection was the researcher’s opinion in relation to the presence or absence of causes of industrial sickness and turnaround strategies in a case. To check the researcher’s prejudice if any, two random samples of 10 cases each were chosen and were rated by two independent raters. One of these raters was trained in management (PhD in Management) and the other was not. The latter was a PhD in
Sociology. The thought of having two raters, one trained and other untrained in management, was also to check the researcher’s prejudice due to the individual’s education, to look at the cases in terms of certain unnaturally forced frameworks. Each rater made a total of 1800 ratings (that is, causes of sickness is 41 and 79 in case of turnaround strategies for 15 cases). The Karl Pearson’s co-efficient correlation between the researcher’s ratings and the trained rater’s ratings was 0.904, and that between the untrained rater’s ratings was slightly lower at 0.855. Since, the inter rater correlations were very high, the reliability of the researcher’s ratings was judged to be good.

As an additional check on reliability, a count was made of the identical ratings given by the researcher and other raters. The numbers were 1698 out of 1800 between the researcher and the trained rater and 1676 out of 1800 between the researcher and the untrained rater. This was compared with the number probable in case of random assignment of values. The chi-square values of 3382 and 3188 for untrained and trained raters respectively were far greater than the critical value of 14.95 at p=0.005. Thus, the reliability of the researcher’s ratings received additional support.

**Validity**- Validity problems arise from the fact that the original writer of the story/case might have missed or misreported some critical information. Missing information was a problem, and had to be accepted as a limitation of the study. Misreporting, however, seemed unlikely in undisguised published stories, which are open to scrutiny by several interest groups, including rival groups and the general public. Special care was taken to include only undisguised and published cases in the sample. Reader’s comments on these cases were also monitored carefully, so as to eliminate cases about which there was any dispute of facts. Notwithstanding the above, it cannot be denied that there are chances of minor errors creeping in. Ideally, one should have interview a sample of organizations whose stories were in the study, and checked the correspondence of information that was reported in the cases (Miller and Friesen 1978). As explained above, collecting ”direct” data on a variable like causes or sickness and turnaround strategies requires contact with the company personnel, so that amount of deep probing may be done. Since, the organizations for the study was spread all over India, it was difficult to interview a random sample of them because of the limitation of time and resources. Hence, the data was collected from a comparable group of 8 organisations in Karnataka from 20 officials from both
top and middle level management. The significant of the difference of means between the group and a random of 30 from the “Case-group “with respect to each variable was tested. Eight out of 120 variables had significantly different (at p< .01) group means. That is, only 6.5% of the variable means were significantly different. Thus, there is some empirical support for the confidence that the cases provide valid data.

**Omissions**- Cases, especially the journalistic ones, are selective about the information they provide. Case-writers would go by what is relevant to their purpose, or by what appeals to the general reader. Thus, they may leave out some information which could turn out to be important for the subsequent researcher.

Omissions, as noted, above, may not be as serious a threat to validity as falsifications. Since, a strategy, is often unacknowledged and unrecognized view of an organization, it can be a guide to several of his decisions across functional areas. This means that lack of information on a particular decision does not necessarily imply that the underlying strategy is missed.

**3.5. Identifying the major dimensions of causes as well as strategies through “t” test and a separate hierarchical factor analysis:**

‘t’ **test**- Student ‘t’ test is one of the most commonly used techniques for testing a hypothesis on the basis of a difference between sample means. Explained in layman's terms, the t test determines a probability that two populations are same with respect to the variable tested. The t-test assesses whether the means of two groups are statistically different from each other. In order to perform the t-test for independent samples, one independent variable and at least one dependent variable are required. The means of the dependent variable will be compared between selected groups based on the specified values of the independent variable.

The p-level reported with a t-test represents the probability of error involved in accepting our research hypothesis about the existence of a difference. Technically speaking, this is the probability of error associated with rejecting the hypothesis of no difference between the two categories of observations (corresponding to the groups) in the population when, in fact, the hypothesis is true. Some researchers suggest that if the difference is in the predicted direction, you can consider only one half (one "tail") of the probability distribution and thus divide the
standard $p$-level reported with a $t$-test (a "two-tailed" probability) by two. Others, however, suggest that you should always report the standard, two-tailed $t$-test probability.

**Factor Analysis**- Factor analysis is a general name denoting a class of procedures primarily used for data reduction and summarization. In research, there may be a large number of variables, most of which are correlated and which must be reduced to a manageable level. Relationship among sets of many interrelated variables are examined and represented in terms of a few underlying factors.

The purpose of factor analysis is to discover simple patterns in the pattern of relationships among the variables. In particular, it seeks to discover if the observed variables can be explained largely or entirely in terms of a much smaller number of variables called factors.

Factor analysis is different as it is used to study the patterns of relationship among many dependent variables, with the goal of discovering something about the nature of the independent variables that affect them, even though those independent variables were not measured directly. Thus answers obtained by factor analysis are necessarily more hypothetical and tentative than is true when independent variables are observed directly. The inferred independent variables are called factors. A typical factor analysis suggests answers to four major questions:

1. How many different factors are needed to explain the pattern of relationships among these variables?
2. What is the nature of those factors?
3. How well do the hypothesized factors explain the observed data?
4. How much purely random or unique variance does each observed variable include?

**Factor analysis is used in the following circumstances**

To identify underlying dimensions, or factors, that explains the correlations among a set of variables.

To identify a new, smaller set of uncorrelated variables to replace the original set of correlated variables in subsequent multivariate analysis (regression).
To identify a smaller set of salient variables from a larger set for use in subsequent multivariate analysis.

Mathematically, factor analysis is somewhat similar to multiple regression analysis, in that each variable is expressed as a linear combination of underlying factors. The amount of variance a variable shares with all other variables included in the analysis is referred to as communality.

Statistics associated with factor analysis

The key statistics associated with factor analysis are as follows:

**Bartlett’s test of sphericity**-Bartlett’s test of sphericity is a test statistic used to examine the hypothesis that the variables are uncorrelated in the population. In other words, the population correlation matrix is an identity matrix; each variable correlates perfectly with itself (r=1) but has no correlation with the other variable (r=0).

**Correlation matrix**: The most often employed techniques of factor analysis—centroid and principal axis—are applied to a matrix of correlation coefficients among the entire variables. A correlation matrix is a lower triangle matrix showing the simple correlations, r, between all possible pairs of variables included in the analysis. The diagonal elements, which are all 1, are usually omitted.

**Eigenvalue**: The eigen value for a given factor measures the variance in all the variables which is accounted for by that factor. It represents the total variance explained by each factor. The ratio of eigenvalues is the ratio of explanatory importance of the factors with respect to the variables. If a factor has a low eigenvalue, then it is contributing little to the explanation of variances in the variables and may be ignored as redundant with more important factors. Thus, Eigenvalues measure the amount of variation in the total sample accounted for by each factor.

**Factor loadings**: A factor loading is the correlation between a variable and a factor that has been extracted from the data. The higher the load the more relevant it is in defining the factor’s dimensionality. A negative value indicates an inverse impact on the factor.
**Factor matrix:** When the factor model is fit to the data, the factor loadings are chosen to minimize the discrepancy between the correlation matrix implied by the model and the actual observed matrix. The amount of discrepancy after the best parameters are chosen can be used as a measure of how consistent the model is with the data. Thus, a factor matrix contains the factor loading of all the variables on all the factors extracted.

**Factor scores:** Also called component scores in PCA, factor scores are the scores of each case (row) on each factor (column). To compute the factor score for a given case for a given factor, one takes the case's standardized score on each variable, multiplies by the corresponding factor loading of the variable for the given factor, and sums these products. Computing factor scores allows one to look for factor outliers. Also, factor scores may be used as variables in subsequent modeling. Factor scores are composite scores estimated for each respondent on the derived factors. Thus, we can estimate the actual values of individual cases (observations) for the factors. These factor scores are particularly useful to perform further analyses involving the factors that you have identified in the factor analysis.

In order to further strengthen these inferences we have performed a two-stage factor analysis on the variables with a view to identifying the principal dimensions of causes and strategies as well as their relative importance for the successful and unsuccessful groups.

A choice to a second-order factor analysis is the hierarchical factor analysis (adopted from the expressions of Yung, Thissen, & McLeod, 1999). A hierarchical model preserves the primary first-order item allotment, however, includes a common factor that each and every observed items load on it directly. Yung et al. showed that the second-order model is inserted inside the hierarchical model, and the second would definitely fit superior. In common, these hierarchical models formed very good fit statistics. To a great extent, though, all the hierarchical models experienced issues of interpretation. Frequently, the disagreement of one or more group factors was not considerably dissimilar from zero, with many item loadings on the group factors that were not considerably different from zero. These issues can be rectified by removing items with non-significant loadings either from the group factors or from the entire analysis.

In this study means, standard deviation, correlation matrices and internal consistency was estimated of reliability using cronbach’s alpha coefficients both for causes of sickness and
turnaround strategies. A phi-coefficient matrix of scores on the items in the questionnaire was subjected to a principal component analysis. A quartimin rotation was performed on the obtained common components to provide the factor pattern matrix at the first-order level and the interfactor correlation matrix. The inter-factor correlation was then subjected to a principal component analysis followed by a varimax rotation to provide second-order solution for interpretation. Loadings greater than +/- 29 were used in the description of the first-order solution. 36 variables relating to causes of sickness were subjected to a modified centroid factor analysis followed by hierarchical rotation and six factors emerged from this analysis. Similarly, 30 variables relating to turnaround strategies were subjected to a modified centroid factor analysis followed by hierarchical rotation and eight factors emerged from this analysis. The following are the yielded six causal factors and eight strategy factors:

A: Causal factor number and name:

Factor-1 (C1): *Growth unsupported by resources and demand*

Factor-2 (C2): *Recessionary conditions*

Factor-3 (C3): *Operational inefficiency*

Factor-4 (C4): *Inadequate utilisation of resources*

Factor -5 (C5): *Low proactiveness vis-à-vis market and technology*

Factor-6 (C6): *Poor adaptability*

B. Strategy factor number and name:

Factor-1 (S1): *Employee engagement*

Factor-2 (S2): *Aggressive promotion of old products in new markets*

Factor-3 (S3): *Cost management strategies*

Factor-4 (S4): *Investments in new markets and R&D*
Factor-5 (S5): *Focus on core business*

Factor-6 (S6): *Changes in product mix and pricing*

Factor-7 (S7): *Lean management*

Factor-8 (S8): *Image building*

(Appendix No.3 refer for details on the variables of causal and strategy factors)

3.6. Testing the reliability of these factors using Cronbach’s Alpha, which were mostly acceptable for social science research (as reported under the sub-section on ‘Findings’).

As indicated by the size of the Cronbach’s Alpha a few variables from the original list had to be removed, resulting in the inclusion of 27 out of 36 originally listed causes and 23 out of 30 of the originally listed strategies in the final factors.

3.7. Testing the differences between successful and unsuccessful turnaround cases in terms of the causes of sickness as well as the strategies with a view to identifying a set of successful turnaround strategies and thereby ascertaining the support for the hypothesis, followed by a comparison of public and private sector cases in terms of the causes of sickness and turnaround strategies.