CHAPTER - 2  

REVIEW OF LITERATURE  

Small and Medium Enterprises (SMEs) constitute a significant part of developing economies, this was emphasized in the research works of Zolton ACS & Audretsch (1993)[1], OECD SMEs Outlook (2002)[2] and Allen N. Berger & Gregory F. Udell (2004)[3]. Majority of these enterprises fund their capital through family or other networks, a sizeable group will borrow from traditional suppliers of credit.

In India it is often stated that 60 percent of SMEs do not borrow from traditional sources. A question arises with regard to the measures that should be taken to assess the loan applications of those who borrow from traditional sources. Most of Small and Medium Enterprise operate in very small scale with very limited equity of the owner and more on high cost debt fund from other sources such as external borrowing from Non Banking firms.

In India, primarily the concept of Small Scale Industry has been in vogue for a long time and the medium enterprise definition is of more recent origin. An SSI is defined on the basis of limit of historical value of investment in plant & machinery, which at present is up to Rs. 1 crore. However, with respect to some specified items, this investment limit has been hiked to Rs. 5 crore. For the recently announced Small and Medium Enterprises Fund[19], the Government of India has approved the limit of investment in plant and machinery to be from above Rs. 1 crore and up to Rs. 10 crore for defining a unit as a Medium Enterprise. Amongst the developing countries, India has been the first to display special consideration to SSIs and basic focus was on making economical use of capital and to absorb the abundant labour supply in the country.

[19] Definition Small & Medium Business Development Chamber of India as defined in SME chapter
Despite its commendable contribution to the economy, MSME Sector does not get the required support from the concerned Government Departments, Banking Sector, Financial Institutions and Corporate Sector, which is an obstacle in becoming more competitive in the National and International Markets and which needs to be taken up for immediate and proper redressal.

MSME sector faces a number of problems - absence of adequate and timely banking finance, limited knowledge and non-availability of suitable technology, low production capacity, ineffective marketing and identification of new markets, constraints on modernisation and expansions, non availability of highly skilled labour at affordable cost, follow up with various agencies in solving regular activities and lack of interaction with government agencies on various matters.

Over the years, the SSI sector in India has continued to remain an important sector of the economy with its noteworthy contribution to the gross domestic product, industrial production, employment generation and exports. As per the Third All India Census of SSIs (2001-02), there were 10.52 million SSI units in the country, of which 1.37 were registered and 9.15 unregistered units. For the year ended March 2004, the said number increased to 11.52 million, providing employment to 27.40 million persons and contributing an output of over Rs. 3,480 billion in 2004.

SMEs’ encompass family run business, small consultancies; start up companies and companies employing 100 or so employees. Hence it is a diverse group of companies. The assessment of their likelihood of default is not immediately straightforward. The two approaches to assessment of default within companies are the Accounting based approach and the Merton based approach[4].

Merton based approach[4] this paper aims to compare empirically the two approaches as applied to SMEs. There is a considerable literature on Accounting based approaches to assessment of companies, see Beaver, 1966[5]; Altman, 1968[6];

Altman & Narayanan, 1997[7]. All these research work are based accounting concepts and Generally Accepted Accounting Principles, which are more conventional in nature. Drawback accounting based approach is predominantly historical in nature and based on static data provided by the clients.

Added to historical nature most of these accounting statements are prepared for different purpose rather than for the credit seeking purpose. For example under mandatory disclosure norm companies have to publish their Audited Financial Statement for stakeholders’ purpose.

Beaver, 1966[5]. research was based on financial ratio and in this approach financial ratios were used as predictors of failure. Main focus of the study was on Leverage ratios and liquidity ratios.

Charitou, Neophytou, & Charalambous, 2004[8]; Keasey & Watson, 1986[9]; Lennox, 1999[10]; Ohlson, 1980[11], Peel et al., 1986[12] and recently more researchers have acknowledged the importance of SMEs.

Keasey & Watson, 1986[9]; the main purpose of this paper is to review and assess the progress in developing small firm failure prediction models. It highlights a number of issues that are of particular importance in evaluating small firm failure prediction models and indicates where future research might be usefully directed. The authors conclude that while it is not yet clear whether they are worthwhile tools in many decision contexts, the present general models may provide material benefits as relatively cheap and simple-to-use preliminary screening devices for routine credit/lending decisions. This is because the classifications accuracy of even relatively simple quantitative models has been shown to outperform consistently human

decision makers. If, however, predictive model is required as an input into more strategic decision making, then the utility of existing empirical models is much less certain.

Peel, M.J and Wilson, N. 1986 since the seminal work of Altman (1968), a large number of researchers have developed statistical models, derived from accounting data, with the aim of predicting corporate failure as evidenced by the event of “bankruptcy”. Such models are now apparently widely and successfully used by credit/investment analysts as an aid to assessing corporate viability (see Altman 1983; Taffler, 1984). However, an area which has received little attention in the management literature, but one of much import to the analyst, is whether it is possible to discriminate between those financially distressed firms which fail, and those where a timely merger appears to serve as a viable alternative to corporate bankruptcy. Peel, M.J and Wilson, N. 1986 made an attempt to find Some Evidence on Discriminating between Failing and Distressed Acquired Firms in the UK Corporate Sector

Taffler, (1982)[13] “Forecasting Company Failure in the UK Using Discriminant Analysis and Financial Ratio Data In the modelling of default using Accounting based approach within this paper one has extended the range of variables considered and applied standard Credit Scoring approaches in modelling.” see Lin, Ansell & Andreeva (2007)[14].

In the Merton based approach, the implementation was followed according to the method in the work of Bharath & Shumway(2004)[15]. Hence the value of the firm is determined in terms of share price. This poses a limitation on the types of SMEs that can be considered. One could have spent time on investigating alternative valuation of the firm but in this current research that has not been explored.

Larry G. Perry and Timothy P. Cronan\textsuperscript{[16]} in their paper on “A note on rank transformation discriminant analysis: An alternative procedure for classifying bank holding company commercial paper ratings” made an attempt to improvise using Multiple discriminant analysis. Recent studies in the financial literature have developed models to predict the rating assigned to a firm's debt by the rating agencies. Multiple discriminant analysis (MDA) has served as the primary statistical tool; however, the results of MDA can be biased. This study presents a less biased procedure which more closely follows that suggested by the rating agencies. The improved results of the model support such a procedure.

Chandy and Duett 1990\textsuperscript{[17]} - This paper extends the previous work in the area of commercial paper rating models using data for the years 1985 and 1986 and the ratings of commercial paper by Standard & Poor's and Moody's. MDA, LOGIT, and CART are the three statistical tests used. The models had a prediction rate about 85 percent. It was found that in some rating categories, the quality component (judgment by analysts) played a greater role than in other categories. Variables such as sales, earning power, return on assets, and amount of equity were identified as most important in explaining ratings of commercial paper.

Bonds ratings by Horrigan 1966\textsuperscript{[18]}; Pinches and Mingo 1973; Kaplan and Urwitz 1979; Belkaoui 1983; Kim 1993; Manzoni 2004; Huang et al. 2004, in their work have not much attention has been given to the examination of individual firms ratings, known as counterparty ratings. Although some studies examine the ratings assigned to non-financial firms by local credit agencies (e.g. Laitinen 1999; Doumpos and Pasiouras 2005) evidence on the counterparty ratings assigned to banks by one of the large agencies is quite limited.

Dr. V. Manickavasagam and Srinivas Gumparthi[19] in their research paper on Risk Management Frame Work for ITES Organizations provided risk management frame work based on operational aspects of organization. Risk management is the process of identification, measuring, or assessing the process deviations from the predetermined targets. Risk Management process also involves developing frame work for evaluation and quantification of deviations through mathematical modelling. Further from management perspective risk management is formulating the strategies to manage it. Strategies include transferring the risk to another party, avoiding the risk, reducing the negative effect of the risk, and accepting some or all of the consequences of a particular risk. Traditional risk management focuses on risks stemming from physical or legal causes. Financial risk management, on the other hand, focuses on risks that can be managed using traded financial instruments. Preparing Risk Assessment Frame is the most important step in the risk management process, and may also be the most difficult and prone to subjectivity and understanding of the analyst. Once uncertainties have been identified, evaluated and assessed the steps to properly handle the risk management in ITES organizations become more systematic and programmable.

Patricia Stanton and David Tweed[20], in their paper, seek to show that research in the risk management area has been 'framed', leading to predictable outcomes. Presentation (framing) blinkers the way a problem is perceived and reviewed. Positive labels are more likely to evoke positive associations; negative labels are more likely to evoke negative associations leading to evaluations dependent on how the situation has been labelled. Much prior literature has focused on the negative area of small business failure. An established framework is used to analyse and illustrate that framing has occurred within that literature with respect to assessment of small business failure. Many researchers have accepted that small business is likely to fail with the result that their research is aimed at supporting this contention. Such acceptance impacts on policy decisions and decisions of venture capitalists, bankers and potential entrepreneurs.

Dr. V.Manickavasagam and Srinivas Gumparthi (2009)[21], in their paper said - A Risk Assessment Model (RAM) is necessary to avoid the limitations associated with a simplistic and broad classification of applicants into a "good" or "bad" category. The absence of appropriate weights in the current evaluation system triggers the need for the development of the comprehensive model based on proven statistical application. Literature survey undertaken brought to surface 28 parameters that need to be taken into account while evaluating a prospect. These parameters were classified under four heads namely credit, operations, liquidity and market risks. Weights developed in this study were based on a conceptual understanding and the importance attached by people proficient in this area. A questionnaire was developed and a judgmental survey was conducted for this purpose amongst various credit officers extending commercial vehicle and construction equipment financing. The sample size was 117 small and medium corporate clients. The existing model was able to classify 28 records correctly. So the predictive power of the original/existing model was about 80%. The proposed/new model is able to classify 30 records correctly. So the predictive power of the propose/new model is 85.71%.

In a relatively recent study, Poon et al. (1999)[22] employed ordered logistic regression to examine the individual financial strength ratings assigned by Moody’s in a sample of 130 banks in 1997. They differed in their study from Poon et al. (1999) in several respects. Fotios Pasiouras, Chrysovalantis Gaganis & Michael Doumpos A multicriteria developed a discrimination approach for the credit rating of Asian banks. In this paper they developed a multicriteria decision aid model, to investigate whether it is possible to replicate the credit ratings of Fitch on Asian banks using publicly available data. The model is developed with the Multi-group Hierarchical Discrimination (MHDIS) approach, following a tenfold cross validation procedure. Five financial variables are selected from a list of nineteen ones through factor analysis. An additional set of five non-financial variables covering ownership,

corporate governance, auditing, strength of bank’s franchise and its banking environment is also being used.

Dr. V. Manickavasagam and Srinivas Gumparthi (2010)\textsuperscript{[23]} Risk Assessment Model for Assessing NBFCs’ (Asset Financing) Customers. In this paper focus is on risk model for NBFCs’. Non-banking financial companies (NBFCs) form an integral part of the Indian financial system. The history of the NBFC Industry in India is a story of under-regulation followed by over-regulation. Policy makers have swung from one extreme position to another in their attempt to set controls and then restrain them so that they do not curb the growth of the industry. This report covers the industry. Most of this NBFCs’ are operating with high risk of lending and more often NBFCs’ lend credit to Small and Medium size enterprises, which are categorized as high risk class of Assets. To assess such high risk assets we need to have a comprehensive model. This paper aim is to build Risk Assessment Model for NBFCs’ based on both qualitative and quantitative aspects of the client.

Of course, ultimately one can argue that qualitative and quantitative should jointly be used for the determination of lending decisions. To explore whether the models signal early the default a comparison is made of the predictive accuracy over a 3 year period before distress. The Merton type models are explored from 2001 to 2004 year horizon. Distance to Default (DD) and Expected Default Frequency (EDF) are calculated. Accounting based (Credit scoring) models based on previous paper Lin, Ansell & Andreeva (2007). Overall predicted correct percentage as well as Type I and Type II error from various models are described. Merton models and Accounting based models are compared for their ability to predict accurately different groups of SMEs. A power curve is used for measuring models predictive accuracy with different financial distress across groups of SMEs. Receiver Operation Characteristics (ROC) plots shows the discrimination ability of different models. The test statistic the Areas under ROC (AUROC) is used to measure the performance of models.

\textsuperscript{[23]} Dr. V. Manickavasagam and Srinivas Gumparthi Risk Assessment Model for Assessing NBFCs’ (Asset Financing) Customers in International Journal of Trade, Economics, and Finance (IJTEF) accepted for publishing in June, 2010 issue
Despite a fair number of studies that have modelled commercial paper ratings (Peavy and Edgar 1983, 1984; Chandy and Duett 1990) and bonds ratings (Horrigan 1966; Pinches and Mingo 1973; Kaplan and Urwitz 1979; Belkaoui 1983; Kim 1993; Manzoni 2004; Huang et al. 2004), not much attention has been given to the examination of individual firms ratings, known as counterparty ratings. Although some studies examine the ratings assigned to non-financial firms by local credit agencies (e.g. Laitinen 1999; Doumpos and Pasiouras 2005) evidence on the counterparty ratings assigned to banks by one of the large agencies is quite limited. In a relatively recent study, Poon et al. (1999) employed ordered logistic regression to examine the individual financial strength ratings assigned by Moody’s in a sample of 130 banks in 1997. We differentiate our study from Poon et al. (1999) in several respects. Fotios Pasiouras, Chrysovalantis Gaganis & Michael Doumpos A multicriteria developed a discrimination approach for the credit rating of Asian banks. In this paper they developed a multicriteria decision aid model, to investigate whether it is possible to replicate the credit ratings of Fitch on Asian banks using publicly available data. The model is developed with the Multi-group Hierarchical Discrimination (MHDIS) approach, following a tenfold cross validation procedure. Five financial variables are selected from a list of nineteen ones through factor analysis. An additional set of five non-financial variables covering ownership, corporate governance, auditing, strength of bank’s franchise and its banking environment is also being used.

William. F. Treacy ‘Credit Risk Rating at Large U.S. Banks’. The paper explains how a bank’s decisions about its internal rating system can have a material effect on its ability to manage credit risk. The central role of human judgment in the rating process and the variety of possible uses for ratings mean that internal incentives can influence rating decisions. Thus, careful design of controls and internal review procedures is a crucial consideration in aligning form with function. Banks with a substantial large corporate market presence are likely to benefit from a rating system that achieves fine distinctions among relatively low-risk credits. In addition, independent credit staffs are often solely responsible for rating large loans. Such an arrangement can greatly reduce potential incentive conflicts.
Dr. V. Manickavasagam and Srinivas Gumparthi (2009) “Property Valuation for Investment Decision (Special Reference to Commercial Mortgage Backed Securities (CMBS)).” In this paper discriminant model application was used to determine factors discriminating valuation of the property. The ultimate aim of any investor is to maximize his returns and minimize his risk. In order to achieve this aim, diversification of investment is made by investors in various types of securities which may lie at a continuum between highly risky and risk free investment. Commercial Mortgage Backed Securities (CMBS) is one such type of instrument where people who are willing to take benefit of real estate boom, but are not backed by real estate knowledge, can invest in these pooled and repacked loans on commercial property mortgages. The need for the study is to help the investors in better investment decision while investing in CMBS. The level of risk involved to get an ‘x’ rate of yield could be determined by analyzing the various characteristics in a CMBS pool affecting the yield, thereby finding out the level of relationship between each independent variable (LTV, DSCR, Loan Term, Amortization term, etc.) and the dependent variable (yield). This study gives an investment pattern for the investors which can be applied for property evaluation for investment decisions.

Ben Hmiden, Oussama and Henchiri, Jamel, "The influence of the financial and accounting information adjustments on the decisions of Rating agencies" (2008). Credit rating agencies (CRA) are qualified as “auxiliaries of the financial information” by all the investors. Ratings are the results of a methodology used by CRA. Within the framework of a demystification of the method of work of agencies, the objective of this paper is to identify the importance of the accounting and financial information adjustments in the decisions of rating agencies. This allows estimating the explanation proportion of this type of information that contributes in the development of the assigned rating. We suggest a statistical and econometrical study that aims at determining the ratings from the accounting and financial variables adjusted by the credit rating agencies to better understand the relation between the adjustments of the ratings and the level of the ascribed score.

Young-Chan Lee, Application of support vector machines to corporate credit rating prediction. Corporate credit rating analysis has drawn a lot of research interests in previous studies, and recent studies have shown that machine learning techniques achieved better performance than traditional statistical ones. This paper applies support vector machines (SVMs) to the corporate credit rating problem in an attempt to suggest a new model with better explanatory power and stability. To serve this purpose, the researcher uses a grid-search technique using 5-fold cross-validation to find out the optimal parameter values of RBF kernel function of SVM. In addition, to evaluate the prediction accuracy of SVM, the researcher compares its performance with those of multiple discriminant analysis (MDA), case-based reasoning (CBR), and three-layer fully connected back-propagation neural networks (BPNs). The experiment results show that SVM outperforms the other methods.

In Banking and Financial Markets Credit rating agencies (CRAs) have very credible and constructive role in providing the unbiased information and also helps in reducing the informative asymmetry between enders and investors, on one side, and issuers on the other side, about the creditworthiness of companies. CRAs' role has expanded with financial globalization and has received an additional boost from Basel II which incorporates the ratings of CRAs into the rules for setting weights for credit risk. Ratings tend to be sticky, ragging markets, and overreact when they do change. This overreaction may have aggravated financial crises in the recent past, contributing to financial instability. The recent bankruptcies and in increasing of Non Performing Assets of many nationalized banks have prompted scrutiny of the agencies and also banker assessment models. Criticism has been especially directed towards the high degree of concentration on qualitative and financial aspects of the company. That means focus is more on the financial and accounting parameters rather than being comprehensive of Fundamental Analysis comprising economy, Industry and Company Analysis (EIC Framework) Framework

Credit rating agencies (subsequently denoted CRAs) specialize in analyzing and evaluating the creditworthiness of corporate and issuers of debt securities. In the new financial architecture, CRAs are expected to become more important in the management of both corporate and credit risk. Their role is limited to the large scale companies and multi corporations. Credit Rating Agencies focus was never on Small
and Medium Enterprises where credit worthiness related information asymmetry is too large. On the other hand banks also handicapped by not having robust comprehensive models. This research attempt has been made to bridge the gap and to provide solutions to the banks. At the same time very soon all the banks will have to adopt very rational model for assessing the credit worthiness of the clients and it will become mandatory for all banks to follow the Basel Committee on Banking Supervision (BCBS) of capital standards for banks culminating in Basel II.

The logic underlying the existence of CRAs is to solve the problem of the informative asymmetry between lenders and borrowers regarding the creditworthiness of the latter. Issuers with lower credit ratings pay higher interest rates embodying larger risk premiums than higher rated issuers. Moreover, ratings determine the eligibility of debt and other financial instruments for the portfolios of certain institutional investors due to national regulations that restrict investment in speculative-grade bonds. The rating agencies fall into two categories: (i) recognized; and (ii) non-recognized. The former are recognized by supervisors in each country for regulatory purposes. In the United States, only five CRAs of which the best known are Moody’s and Standard and Poor’s (S&P) are recognized by the Security and Exchange Commission (SEC). The majority of CRAs such as the Economist Intelligence Unit (EIU), Institutional Investor (II), and Euro money are "non-recognized". There is a wide disparity among CRAs. They may differ in size and scope (geographical and sectoral) of coverage. There are also wide differences in their methodologies and a definition of the default risk, which renders comparison between them, becomes difficult.

In preparing for the formal implementation of the New Basel Capital Accord (Basel II) at the end of 2006, our banking sector has been studying relevant provisions and response strategies. In the hope to promote and keep our banking supervision and risk management at the international level, the Bureau of Monetary Affairs under the Financial Supervisory Commission (formerly the Bureau of Monetary Affairs under the Ministry of Finance) in particular has set up a New Basel Capital Accord Joint Research Taskforce with Bankers Association to study relevant regulatory and implemental issues. The banking sector is paying particular attention to the internal-ratings based (IRB) approaches for credit risk provided in Basel II. Especially, model
validation has been the focus among practitioners, which plays an important role in IRB qualification by supervisor. As an introductory effort, this paper tackles the subject of credit rating model validation. In reference to current theories and practices on the subject, we examine the considerations for model validation and introduce currently adopted approaches. However, readers should keep in mind that this paper only discusses quantitative approaches. New theories and approaches for qualitative validation will be discussed at a later date as this field of study develops. If a bank realizes the whole picture about model validation, it will facilitate the work of IRB model construction and strategic planning for its business operation. More so, if the rating system is accepted by the regulatory authority, it will certainly boost the bank's stature and market competitiveness. The following is an introduction to the minimum operational requirements for the validation of IRB model outputs suggested in the draft of Basel II, complemented with actual case study.

The existing models are based on just financial information of the companies and very less weightage has been give to the economic issues concerning the business. Most of the models have short term assessment features and they do not look into dynamic change process of economy. Other concerned issue is that ranks are just valid for certain period of time or for the particular issue. If any changes occur in economic cycle or changes in government policies with respect to business or trade, the existing models do not have mechanism to reveal the impact and such implications on the risk factor of the company. Qualitative and quantitative aspects of the economic decision such as monetary policy, fiscal policy and changes in trade policies are not integrated in any of the models which are in use. Over and above each financial institution and bank is following its own method in assessing credit worthiness of the customers. Credit rating agencies are also not providing comprehensive information regarding creditworthiness of the companies. Hence this research is aimed at providing solution to all concerned agencies.