

PREDICTION OF SMALL BUSINESS OWNERS
SUCCESS LEVEL BY MEANS OF BIOGRAPHICAL AND
BUSINESS VARIABLES

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DECLARATION

This work, unless otherwise indicated in the text, is the result of the individual effort of the author and is accordingly his own original work.

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DECEMBER 1992

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ABSTRACT

The main aim of this study was to establish the value of biographical and business variables as predictors of the level of success of small business owners in South Africa. The study is based on secondary information obtained from the files of a national venture capital organisation.

The sample consisted of 569 small business owners active within 435 businesses. The statistical analysis strategy implemented was aimed at eliminating chance and capitalisation on chance in an attempt to eventually identify discriminants in a more accurate, valid and reliable manner. One-way Analyses of Variance with Bonferroni's Ranges test specified (only ordinal and interval scale variables) and Chi-square (only nominal scale variables) were used to initially investigate relationships among level of success of small business owners and biographical and business variables. Stepwise Discriminant analyses was then used to determine the relationship between level of success of small business owners and biographical/business variables.

Significant differences in the level of success of small business owners were found for five biographical and seven business variables. Discriminant analyses was then used to predict level of success of small business owners by means of the significant biographical/business variables identified in the first phase of the statistical analysis (Chi-square, One-way Analyses of Variance, Stepwise Discriminant Analyses).

The results of the study revealed that certain biographical and business variables are promising as predictors of the level of success of small business owners. The results are discussed in terms of (1) implications for the selection criteria of venture capital organisations in selecting possible successful small business owners and (2) future economic policies for South Africa.

CHAPTER 1

THE PROBLEM AND ITS SETTING

"It is the entrepreneurs who know the rules of the world and the laws of God. Thus they sustain the world. In their careers, there is little of optimizing calculation, nothing of delicate balance of markets. They overthrow establishment rather than establish equilibria. They are the heroes of economic life."

(Gilder, 1984: pp 18-19)

The view of entrepreneurs held by Gilder has importance for a future South African scenario particularly considering the belief that the creation of new business enterprises is vital both to the survival of our society and economic growth. Bell (1968, p 1) states that, "the process of economic development is one in which the entire fabric of a society is involved and a complete picture would entail the consideration and inclusion of all the variables which are subject to change. Since we are as yet still very far from a general interdisciplinary system it is hoped, by deepening our understanding of the role of a single variable, entrepreneurship, to throw further light on the process of socio-economic change". Harper (1991, p7) states that, "Entrepreneurship and enterprise have been widely recognised as having a critical role to play in economic development and there are many reasons why this role is perceived to be even more important in the poorer nations of the world."

Griffin (1990) and Timmons, Smollen and Dingee (1985) stress that research (Hofer & Sandberg, 1987; Smilor & Feeser, 1991; Young & Francis, 1991) has shown that new business enterprises are the primary source of new employment opportunities. (McClelland (1987) also argues that there is no better way to effect rapid economic growth than to increase dramatically the number of

active entrepreneurs in a society. The small businesses that they develop create jobs, decrease dependency on government and provide a means of economic development that is considerably less expensive and more efficient than the resources needed for developing large businesses. In light of Timmons et al (1985) and McClelland's (1987) arguments, Stevenson and Jarillo (1990) therefore argue that if entrepreneurship is at the root of economic development, researchers need to understand "those" who provide it.

From an economic point of view the countries of the world can be regarded as being at various stages of economic development. Sunter (1987), for example, distinguished between the "rich old millions", or the Triad of rich countries (North America, Japan and Western Europe) and the "poor young billions" or the non-Triad countries (Africa, Asia and South America). He further states that fifteen percent of the world's population live in the Triad and they earn approximately R27 000 (\$13 400) per capita per year, whereas individuals in the non-Triad countries who make up 85 % of the world's population earn on average only about R2 200 (\$1 100) per capita per year. Sunter (1987) further states that it seems as if this situation is worsening, since the populations in underdeveloped countries are growing at a much faster rate, eg. a 34 % increase by the year 2005, while those in developed countries are either declining (West Germany) or remaining static (Western Europe), or merely growing at a very slow rate (Japan). In support of Sunter (1987), Moolman (1990a, p7) states that: "During the ten-year period 1977 to 1987, South African work opportunities only increased by 2,7 percent while the South African population increased by 23,6 percent". Moolman (1990b) further argues that the population of South Africa would probably increase to fifty million by the year 2000 and that job opportunities would need to be created at a rate of 1300 per day or 380 000 per year to accommodate such a population growth. Moolman (1990b) further states that the ratio of entrepreneurs compared with the general workforce in South Africa is 1 : 52, and that this ratio will probably increase to 1 : 76 by the year

2000. In comparison the ratio of entrepreneur : general workforce in developed countries is 1 : 10 (Moolman, 1990b). Harper (1991) argues that old colonial r egimes (i.e. British rule in South Africa) encouraged the notion that government was responsible for economic activities and that this led to excessive reliance on state enterprises. Harper (ibid) further comments that these "state-owned businesses" are now collapsing in large numbers, and that only local entrepreneurs can fill the gap created by this loss of jobs and services. Hisrich (1990) comments that entrepreneurship has resulted in several million new businesses being formed throughout the world, even in controlled economies such as China, Hungary and Poland. He further states that these millions of company formations occur despite recession, inflation, high interest rates, lack of infrastructure, economic uncertainty, and the fear of failure.

In the light of Sunter's (1987) world scenario sketch, Harper's (1991) and Moolman's (1990a & 1990b) arguments, we should take notice of some researchers who give references and make pleas (as described in the latter part of this paragraph) on the place and application of entrepreneurship of this world scenario in an attempt to relieve the present bleak economic future facing South Africa. Some of these researchers argue that entrepreneurship should be encouraged/taught to non-industrial groups to foster economic growth (Brockhaus, 1991; Foster, 1988; Frick & Rollins, 1988; Maricle & Birkenholz, 1988; Walla & Burger, 1988), and also for increased levels of entrepreneurship in corporations (large organisations) and prescriptions on how to achieve this (Burgelman, 1984; Hisrich, 1990; Kuratko, Montagno & Hornsby, 1990; Lumpkin & Ireland, 1988; Ohe, Honjo & MacMillan, 1990; Peterson, 1981; Sinetar, 1985; Weaver, 1987; Whiting, 1987; Winslow, 1990; Zahra, 1991). Also the abysmally low success rate of entrepreneurial organisations in general has generated a great deal of interest, judged by the number of articles written about this aspect (Charan, Hofer & Mahon, 1980; Chrisman, 1989; Cranston & Flamholtz, 1986; d'Amboise & Muldowney, 1988; Durand, 1975; Fry, 1987; Hofer & Sandberg,

1987; Keats & Bracker, 1988; Kent, 1983; Lipper, 1987; Lumpkin & Ireland, 1988; Reich, 1987).

The implication of these researchers' pleas seem to be that by encouraging entrepreneurship and the resulting small business firms formed can be seen as a major factor in job creation (Harper, 1991; Hofer & Sandberg, 1987; Keats & Bracker, 1988; Lumpkin & Ireland, 1988; Smilor & Feeser, 1991; Young & Francis, 1991) which has important implications for Third world policy makers in view of the high unemployment figures (Moolman, 1990a), slow economic growth rate and high birth rate situation prevailing in some of these countries. Boshoff (1989) supports this view for the South African scenario.

Boshoff (1989) concludes that intense attempts are being made worldwide to encourage the establishment of small business firms and special attempts are being made to increase the survival rate of small business ventures in their infancy.

In a developing third world country such as South Africa there is a shortage of small- and medium sized business ventures (Botha, 1983). Public policy programmes are being developed in many countries and states worldwide to create or stimulate business formation (Cooper & Dunkelberg, 1986).

Nafziger (1977) comments that even if all other resources of production for the creation of small business ventures were adequate, but the factor of entrepreneurship was lacking, the efforts would be in vain. Nafziger (ibid) concludes that it appears that the scarce factor in the creation of small business ventures are entrepreneurial, managerial and organisational skills.

Therefore, should it be possible to identify entrepreneurial potential at an early stage (Solomon & Fernald, 1990), it would lead to an increased growth in the small business sector and the economy as a whole (Miner, 1990). The main aim of the study is

therefore the identification of variables that will help in the prediction of entrepreneurial success. This line of research is supported by Woo, Cooper and Dunkelberg (1991). It is thus argued that if we want to promote economic development in South Africa, we should immediately develop and use improved methods for selecting potential entrepreneurs.

The thesis is organised as follows. The following chapter (Chapter two) documents the major definitions of entrepreneurship, the biographical and business characteristics of entrepreneurs, and possible research directions derived from the literature surveyed with the ensuing research questions stated for this study. Chapter three describes selection as a process and factors influencing the selection process. Chapter four describes the research methodology and statistical analysis proposed. Chapter five presents the research results. Chapter six concludes this thesis with the discussion of the research results obtained and implied research directions for the future.

CHAPTER 2

ENTREPRENEURSHIP/SMALL BUSINESS

According to Carland, Hoy, Boulton and Carland (1984) studies of entrepreneurship neglect to distinguish adequately between entrepreneurs and small business owners.

Therefore, in this chapter entrepreneurship will be reviewed and defined in depth, with an attempt to distinguish entrepreneurs from small business owners. In view of the observation by Carland et al (1984) regarding studies of entrepreneurship (mentioned above), the biographical characteristics of entrepreneurs will also be reviewed. Finally, research directions as derived from the reviewed literature, will be discussed and the research questions then stated.

2.1 DEFINITION OF ENTREPRENEURSHIP/SMALL BUSINESS OWNERS

A large number of definitions of entrepreneurship exist and have been used.

An early contributor to the field was an economist, Schumpeter (1934, 1947, 1950, 1965). For Schumpeter entrepreneurship should be compared with both routine decision making and invention. According to Nafziger (1977), the essence of Schumpeter's perception of entrepreneurship was the novel recombination of pre-existing factors of production where the outcome of this recombination cannot clearly be predicted. Inherent in this definition is the fact that entrepreneurship refers to a process, not a person. Schumpeter (1934) did, however, recognise that an entrepreneurial personality existed. According to Peterson (1981, p.67) Schumpeter (1934) asserted, "it took a person with unusual traits of character, a combination of the will to found a private kingdom, a drive to overcome all obstacles, whether human

or physical, and a joy in creating, getting things done, and exercising one's ingenuity".

The innovative and creative process implied by Schumpeter's definition seems to form the essence of some other authors' (Stevenson & Jarillo, 1990) definitions of entrepreneurship. Burch (1986) for instance, devotes a significant part of his argument about entrepreneurs and the way they function to the role of innovation in the entrepreneurial process. Entrepreneurship is furthermore seen as related to creativity (Foster, 1988; Stevenson & Gumpert, 1985).

Risk-taking is implied in Schumpeter's definition and is another starting point for the definition of entrepreneurship. At a very early stage Mill (1926) saw risk bearing as an entrepreneurial function. The views expressed by McClelland (1961, 1969) regarding the characteristics of entrepreneurs seem to necessitate including risk-taking as a component of the definition of entrepreneurship. This view seems to be confirmed by Griffin (1990) and Welsh and White (1981). It also featured prominently in the views of De Farcy (1973, cited in Peterson, 1981) as well as in both later and earlier work of, for instance, Ahwiring-Obeng (1986); Hull, Bosley and Udell (1980) and Palmer (1971 p.38) who puts it strongly "... the entrepreneurial function involves primarily risk measurement and risk-taking in a business organisation. Furthermore the successful entrepreneur is that individual who can correctly interpret the risk situation and then determine policies which will minimize the risk involved". However, this element seems to have disappeared from McClelland's views in recent years (McClelland, 1987). Brockhaus (1980a) confirms McClelland's views in that he found that risk-taking was not a good predictor of entrepreneurship. Supporting McClelland's view is Winslow (1990, p.258) who comments that entrepreneurs may really be risk avoiders since: "... they do not wish to run the risk

of being dependent on whims, caprice and illness of bosses of organisations to determine their success". Woo, Cooper and Dunkelberg (1991) also support the above view of McClelland for certain types of entrepreneurs.

The social-economic field yielded a different kind of definition of entrepreneurship. Leibenstein (1968, p.72), for instance, saw entrepreneurship as a phenomenon which could be divided into "routine entrepreneurship which is really a kind of management and for the rest of the spectrum we have Schumpeterian or "new type" entrepreneurship". Leibenstein (1968, p.75) goes on to say: "As we have defined the entrepreneur he is an individual or group of individuals with four major characteristics: he connects different markets, he is capable of making up for market deficiencies (gap-filling), he is an "input-completer", and he creates or expands time-binding, input-transforming entities, i.e. firms". Therefore, Leibenstein (ibid) views the entrepreneur's basic function as the destruction of pockets of inefficiency within a system (Stevenson & Jarillo, 1990).

Formal social and organisational theory seems to have yielded a definition used by Hartman (1959, p.450-451) who wrote: "A distinction between manager and entrepreneur in terms of their relationship to formal authority in the industrial organisation The entrepreneur may justify his formal authority independently or he may describe it as delegated from others, notably from the stockholders. But within the organisation he alone is the source of all formal authority. Management is defined residually as "not being the source of all authority". Stevenson and Jarillo (1990, p.17) surveying literature, conclude that: ". . . . an implicit definition of entrepreneurship as something which is radically different from corporate management". According to this view the borderline between the entrepreneur and the manager is thus relatively precise.

This idea is also put forward by Litzinger (1965, p.268) who writes: "The distinction is drawn between 'entrepreneurs' who are goal and action oriented as contrasted to 'managers' who carry out policies and procedures in achieving the goals". According to Litzinger (ibid, p.268) owners of 'Mom and Pop' motels appear as the entrepreneurial type who have invested their own capital and operate a business in contrast to the more 'managerial' types who head motel chains.

The very large number of operational definitions used in empirical investigations should be mentioned.

Some researchers view entrepreneurship as a process of owning an own business venture. Brockhaus (1980a, p.510) states: "... an entrepreneur is defined as a major owner and manager of a business venture not employed elsewhere". Supporting Brockhaus' operational definition, more recently, Fraboni and Saltstone (1990, p.107) define an entrepreneur as "... one who both owns and operates a business".

A second operational viewpoint on entrepreneurship is the risk-taking propensity involved in being an entrepreneur. Solomon in Winslow & Solomon (1987, p.203) defines an entrepreneur as "an innovative person who creates something different with value (added) by devoting time and effort, assuming the financial, psychological and social risks in an action oriented perspective and receiving the resulting rewards (and punishments) of monetary and personal satisfaction". Ahwireng-Obeng (1986, p.43) states: "The entrepreneur is the ultimate decision-maker in any particular enterprise must bear the risk for, and exercise the ultimate control over, the enterprise". Hull, Bosley and Udell (1980, p.11) are more dimensional in their definition of an entrepreneur: "A person who organises and manages a business undertaking assuming the risk for the sake of profit includes those individuals who purchase

or inherit an existing business with the intention of (and who puts in effort toward) expanding it".

A third operational perspective of entrepreneurship is the act of founding a new business venture where none existed before. Winslow and Solomon (1987, p.203) defined an entrepreneur as "one who starts and is successful in a venture and/or project that leads to profit (monetary or personal) or benefits society". Collins and Moore (1970, p.10) state: "We distinguish between organisation builders who create new and independent firms and those who perform entrepreneurial functions within already established organisations." Davids (1963, p.3) indicates that entrepreneurs are synonymous with "founders of new businesses". Draheim (1972, p.3) is more elaborate: "Entrepreneurship - the act of founding a new company where none existed before The term is also used to indicate that the founders have some significant ownership stake in the business (they are not only employees) and that their intention is for the business to grow and prosper beyond the self-employment stage". Lachman (1980) identifies the entrepreneur rather narrowly as a person who uses a new combination of production factors to produce the first brand in an industry. Begley and Boyd (1987), Chrisman, Carsrud, DeCastro and Herron (1990), Mescon and Montanari (1981) and Ohe, Honjo and MacMillan (1990) essentially agree with the previous authors when they rather narrowly see entrepreneurs as individuals who are founders of new businesses.

A fourth operational view of entrepreneurship is the level of success attained by an individual in his/her own business venture. In describing a study done on the East Coast of the United States of America, Hornaday and Aboud (1971, p.143) defined entrepreneurs in terms of success i.e., " The successful entrepreneur was an individual defined as a man or woman who started a business where there was

none before, who had at least eight employees and who had been established for at least five years". In an earlier paper Hornaday and Bunker (1970, p.50) used as an operational definition of a successful entrepreneur: "... the successful entrepreneur was an individual who had started a business, building it where no previous business had been functioning, and continuing for a period of at least five years to the present profit-making structure with 15 or more employees".

A fifth operational view of entrepreneurship is the act of discovering and acting on a potential opportunity. In an attempt to distinguish entrepreneurs from managers, Kaish and Gilad (1991, p.46) defined entrepreneurship as "... the process of first, discovering, and second, acting on a disequilibrium opportunity".

The definitions of the entrepreneur and entrepreneurship outlined thus far, and as summarised by Long (1983) as shown in Table 1, are far from exhaustive.

TABLE 1 SUMMARY OF IMPORTANT DEFINITIONAL ATTRIBUTES

Richard Cantillon (circa 1730)	<ul style="list-style-type: none"> - entrepreneur defined as a self-employed person - additional uncertainty accompanies self-employment - entrepreneurs should proportion their activity to market demands
Jean-Baptiste Say (circa 1810)	<ul style="list-style-type: none"> - many managerial talents are required to be a successful entrepreneur - many obstacles and uncertainties accompany entrepreneurship

TABLE 1 (continued)

Alfred Marshall (circa 1890)	- the abilities to be an entrepreneur are different complementary to the abilities needed to be a manager
Joseph Schumpeter (circa 1910)	- entrepreneurship is in its essence the finding and promoting of new combinations of productive factors - entrepreneurship is the prime creative socio-economic factor
Frank Knight (circa 1920)	- the courage to bear uncertainty is the essential aspect of entrepreneurship - entrepreneurship is required to perform such fundamental managerial functions as responsible direction and control
Edith Penrose (circa 1960)	- managerial capacities should be distinguished from entrepreneurial capacities - identifying and exploiting opportunistic ideas for expansion of smaller enterprises is the essential aspect of entrepreneurship
Harvey Leibenstein (circa 1970)	- entrepreneurial activity is aimed toward the reduction of organisational inefficiency and to the reversal of organisational entropy
Israel Kirzner (circa 1975)	- the identification of market arbitrage opportunities is the fundamental function of the entrepreneur

Obtained from: Long, W. (1983). The Meaning of Entrepreneurship. American Journal of Small Business, 8(2), p.54.

Even so one cannot but agree with Gartner (1988, pp.20-21) who says "... Many (and often vague) definitions of the entrepreneur have been used; there are few studies that employ the same definition". Fagenson & Marcus (1991), Hisrich (1990), and Moolman (1990b) support Gartner's view that no universally accepted definition has yet emerged. Eventually, Gartner (1990) states that if no existing definition of entrepreneurship can be agreed upon by most researchers and practitioners, then it is important to explain what they mean. If many different meanings of entrepreneurship exist, then it behoves researchers to make sure that other researchers know what they are talking about. Gartner (1989) concludes that a common definition of the entrepreneur remains elusive and controversial. A great deal of confusion seems especially to exist with regard to the distinction between small business owners and entrepreneurs.

However, Carland, Hoy, Boulton and Carland (1984, p.358) define a small business owner and entrepreneur as follows: "Small business owner: A small business owner is an individual who establishes and manages a business for the principal purpose of furthering personal goals. The business must be the primary source of income and will consume the greater part of one's time and resources. The owner perceives the business as an extension of his or her personality, intricately bound with family needs and desires. Entrepreneur: An entrepreneur is an individual who establishes and manages a business for the principal purposes of profit and growth. The entrepreneur is characterised principally by innovative behaviour and will employ strategic management practices in the business".

This creates a situation where a considerable degree of vagueness, ambiguity and even confusion exists (Winslow, 1990). That this situation has a negative effect on empirical studies in this field will soon be shown.

A second observation is that entrepreneurship, especially when operationally defined, tends to be seen as related to business and to functioning in a business environment only. Entrepreneurial acts may presumably also occur in other spheres of life - even in science and scientific endeavour. The definition of entrepreneurship and research in this field may be improved by broadening the view to include entrepreneurship in other than business situations.

In light of the literature reviewed and especially the definitions, according to Carland, Hoy, Boulton and Carland (1984), of small business owners and entrepreneurs, most of the subjects included in this study can thus be considered as small business owners.

2.2 GENERAL CHARACTERISTICS OF ENTREPRENEURS

A large volume of research has been carried out to try and determine the characteristics of entrepreneurs. In the latter part of the chapter attention will be given to biographic and business factors as possible predictors of success as an entrepreneur.

Regarding the general characteristics (other than the biographic and business characteristics) of entrepreneurs a summary of the findings to date can be found in Brockhaus and Horwitz (1985) and Gartner (1988).

Twenty-three years ago Cole (1969, p.17) concluded: "My own personal experience was that for ten years we ran a research centre in entrepreneurial history, for ten years we tried to define the entrepreneur. We never succeeded. Each of us had some notion of it - what he thought was, for his purposes, a useful definition. And I don't think you're going to get further than that."

It seems as if Cole's views were destined to be almost prophetic. Brockhaus and Horwitz (1985, p.42) concluded that "The literature appears to support the argument that there is no generic definition of the entrepreneur, or if there is we do not have the psychological instruments to discover it at this time". Gartner (1988, p.20-21) states "(1) many (and often vague) definitions of the entrepreneur have been used (in many studies the entrepreneur is never defined); (2) there are few studies that employ the same definition; (3) lack of basic agreement as to "who an entrepreneur is" has led to the selection of samples of "entrepreneurs" that are hardly homogeneous For many of the samples it could be said that variation within the sample is more significant, i.e. could tell us more than variation between the sample and the general population; (4) a startling number of traits and characteristics have been attributed to the entrepreneur, and a "psychological profile" of the entrepreneur assembled from these studies would portray someone larger than life, full of contradictions and conversely, someone so full of traits that (s)he would have to be a sort of generic Everyman". Fraboni and Saltstone (1990, p.105) support Gartner's (ibid) view by stating that "research into the psychological characteristics of entrepreneurs has been hampered by the lack of a uniform definition which can be translated into selection criteria for subjects." Hisrich (1990) also supports the view that a universally accepted definition has not yet emerged. The lack of an agreed upon definition in the field of entrepreneurship is best summarised by Gartner (1990, p.16) when he asks: "Is entrepreneurship just a buzzword or does it have particular characteristics that can be identified and studied?"

Fraboni and Saltstone (1990) further argue that because of inadequate sample descriptions and results based on heterogeneous samples, the summarisation of research

findings and progress in the field of entrepreneurship are being inhibited. Moore (1990), Solomon & Fernald (1990), Stevenson & Jarillo (1990), and Winslow (1990) support this view. Therefore the picture with regard to our knowledge of the traits of an entrepreneur, under these circumstances, does not appear to be opportune.

2.3 BIOGRAPHICAL AND BUSINESS VARIABLES IN ENTREPRENEURSHIP

From the literature reviewed it is apparent that biographical variables have been thoroughly researched. For the purpose of this study we shall attempt to highlight the major findings with regard to the numerous biographical and business variables which have been studied.

2.3.1 Age

The age at which entrepreneurs make the decision to start a business is widely distributed (Hisrich, 1990; Kent, Sexton & Vesper, 1982). It seems as though the years between 30 and 40 have most frequently been mentioned as the age when the entrepreneurial decision is most likely to be made (Birley, Moss & Saunders, 1987; Brockhaus & Nord, 1979; Cromie & Hayes, 1988; Hornaday & Aboud, 1971; Litvak & Maule, 1973; Ohe, Honjo & MacMillan, 1990; Silver, 1988; Thorne & Ball, 1981).

According to Liles (1974), an individual has, between the years of 25 and 40 obtained sufficient experience, competence, and self-confidence, but has not yet incurred financial and family obligations or a position of prestige and responsibility in a large company. Liles (ibid) sees this age period as a "free choice period" during which career changes are easier to make. According to Hisrich (1990), the average age at which entrepreneurs start their new ventures has little

meaning, but he also states that, earlier starts in an entrepreneurial career are better than later ones.

Brockhaus (1980b) found that the mean age for successful entrepreneurs (23.4 years) differed significantly from the mean age of unsuccessful entrepreneurs (36.6 years). Brockhaus (ibid) attributed this result to the fact that the activities required for the success of a new venture demand considerable physical and psychological strengths. Older, unsuccessful entrepreneurs may not have sufficient energy to devote to their new enterprise (Kalleberg & Leicht, 1991).

Cooper and Dunkelberg (1986) argue that the path to ownership may be related to the age at which an entrepreneur becomes an owner, for example inherited or purchased or self-started businesses may be associated with different capital requirements, which may need individuals from different backgrounds and ages.

Birley, Moss and Saunders (1987) concluded that age constituted one of the major differences between male and female entrepreneurs. Birley et al. (1987) found that female entrepreneurs (mean age 32.7 years) had a significantly lower age profile than male entrepreneurs (mean age 39.3 years), although members of both groups remained within the "popular" age range of 30-40 years indicated above. Sexton and Bowman-Upton (1990) found, in contrast to the previous authors, no significant difference in the mean age of female entrepreneurs (41 years) and male entrepreneurs (39 years), although the males were on average slightly younger. A study conducted by the United States Department of Commerce (1986, in Moore 1990) suggest that a traditional female entrepreneur is between 35 years and 55 years old. Hisrich (1990) concludes by stating that in general male entrepreneurs tend to start their first significant

venture in their early thirties, whereas female entrepreneurs tend to do this in their middle thirties.

From the research reviewed it can be gathered that most researchers agree on the general age at which an entrepreneur tends to start his new venture, but uncertainty still exists on the motivation of entrepreneurs to take the entrepreneurial decision at this specific age.

2.3.2 Marital Status

From the literature reviewed it seems as though the studies in the past mainly concentrated on the marital status of the female entrepreneur (Bowen & Hisrich, 1986; Cromie & Hayes, 1988; Hisrich, 1986; Lee-Gosselin & Grisé, 1990). Lee-Gosselin and Grisé (1990) found in their study of Quebec women entrepreneurs that: "Many more Quebec women entrepreneurs (74 %) than general Quebec women (58 %) have a spouse and the entrepreneurs also have more children (on average 2,4 children per entrepreneur compared to 1,5 for adult Quebec women)". Cromie and Hayes (1988) concluded that having children, and not being married, distinguished married female entrepreneurs from single female entrepreneurs as children should be seen as the reason for starting a new venture.

Hisrich (1986) found (in a multi-national study) that the majority of woman entrepreneurs in the United States (54%), Puerto Rico (57%), Republic of Ireland (49%) and Northern Ireland (82%) were married. Thorne and Ball (1981), Fraboni and Saltstone (1990) and Howell (1972) concluded, in their studies of entrepreneurs in general, that the majority of entrepreneurs were married. Similarly, Silver (1988) commented that entrepreneurs in general are almost always married.

Pickles and O'Farrell (1986) reasoned that marriage might provide the emotional and psychological stability which entrepreneurs require to launch a new venture. They further mention that entrepreneurs rely heavily on their spouses' unpaid services in the early stages of development of their business, and state that being married will increase the probability of a new business being found by 1,87 times.

Contrary to what has been stated this far, Liles (1974) argues that a would-be entrepreneur's freedom to break away and start a company becomes hindered by financial and other obligations typically associated with marriage. The family risks involved in starting a new venture may deter the would-be entrepreneur, especially those entrepreneurs with children, for he may expose his family to the risks of a financially unstable family experience which may lead to permanent emotional scars from inattention, discord and bitterness.

Liles (ibid) also argues that a spouse's reaction to the idea of starting a business is usually a major influence upon how long and how seriously an individual considers starting a company. The spouse will be directly influenced by his/her husband's/wife's decision and therefore he/she could on the one extreme respond with extreme anxiety or on the other hand become a key part of the new venture. At either extreme the spouse's role can be critical to the success or failure of the venture. Ahwireng-Obeng (1986) supports Liles' (1974) arguments that the family is seen to act as a major restraint or incentive to achieve in general and on economic efforts in particular.

2.3.3 Employment History

Various approaches to determining the influence of work history on entrepreneurship exist (Bowen & Hisrich, 1986). Some of these are: the extent of prior work - especially in the same business field - that the entrepreneur embarked upon before starting his own venture (Ahwireng-Obeng, 1986; Cooper & Dunkelberg, 1981; Cromie & Hayes, 1988; El-Namaki, 1988; Hisrich, 1984 & 1986; Lamont, 1972; Litvak & Maule, 1973; Ray & Turpin, 1990; Roure & Maidique, 1986; Thorne & Ball, 1981), satisfaction with prior job (Cromie, 1987; Hisrich, 1990; King, 1986), displacement (King, 1986) and the role and influence that incubator organisations exert on would-be entrepreneurs and which act as "incubators" to the world of entrepreneurship (Cooper & Dunkelberg, 1981; Cooper & Dunkelberg, 1986; Ray & Turpin, 1990). Incubator organisations describe the type of organisation for which the entrepreneur worked immediately prior founding his own venture (Birley, 1989). Bowen and Hisrich's (1986) summarisation of available research regarding patterns of the prior work experience of entrepreneurs is depicted in Table 2.

TABLE 2 ENTREPRENEURS - EXTENT OF PRIOR WORKEntrepreneurs in general
or male entrepreneurs only

Brockhaus and Nord (1979) - 28 St. Louis entrepreneurs had an average of 3,11 previous jobs (vs. 4,10 for managers who had changed jobs and 2.58 for managers who had been promoted).

Cooper and Dunkelberg (1984) found that 64,5% of 1,392 persons who started or purchased a business had had two or more previous jobs. Only 11% had prior supervisory experience over other managers.

Female entrepreneurs

Hisrich and Brush (1983) found that 78% of 468 female entrepreneurs were launching their first venture. 67% Had previous experience in their field.

Cuba, Decenzo, and Anish (1983) reported that median prior work experience for 58 female entrepreneurs from three southern cities was 7,5 years.

DeCarlo and Lyons (1979) noted that 83% of 77 non-minority female entrepreneurs had no prior entrepreneurial experience.

Humphreys and McClung (1981) reported that 56,4% Oklahoma female entrepreneurs had worked for other employers for 5 years or more.

Watkins and Watkins (1983) - 60% of 58 British female entrepreneurs were opening their first business. 24% had prior managerial experience and only 40% had prior experience in the field (50% had neither vs. 5% for a comparison sample of males).

Obtained from: Bowen, D.D., & Hisrich, R.D. (1986). The female entrepreneur: A career development perspective. Academy of Management Review, 11(2), p. 401.

In their study comparing Japanese entrepreneurs and corporate managers, Ohe, Honjo and MacMillan (1990) found that entrepreneurs averaged 1,9 job changes, while the managers changed jobs an average of only 0,2 times. In contrast Brockhaus and Nord (1979) found in their

study of St. Louis entrepreneurs and managers that the entrepreneurs averaged 3,11 job changes versus 4,1 job changes for managers. These contrasting findings could be indicative of the difference in the cultures of the samples studied.

For the purpose of this thesis we shall focus mainly on the influence which the extent of the prior work history of an entrepreneur exerts on the kind of new venture he creates.

Day (1986) comments that unlike specialists who need fewer skills, the entrepreneur needs a broad range of skills to run his own business. Supporting this view, Hisrich (1990) and Smilor and Feeser (1991) comment that expertise and experience involving management, marketing, finance, production, manufacturing, law, science and engineering may be the most critical factors in influencing the ultimate success or failure of an enterprise. Ray and Turpin (1990) found that more than two-thirds of high-technology entrepreneurs either had strong contact with the market or research and development departments of their incubator organisations. Hisrich (1990, p.210) states: "... two work environments tend to be particularly good in spawning new enterprises: research and development and marketing". Lamont (1972), Litvak and Maule (1973) and Thorne and Ball (1981) concluded that a considerable amount of technology transfer occurs from the entrepreneur's former employer's organisation to his new enterprise. Thus, the fledgling entrepreneur usually tries to exploit that which "he knows best". Ray and Turpin (1990, p.97) support this view when they state: "Approximately 85 % of the new firms in the United States had initial products or services that drew on the founder's previous technical experience this clearly demonstrates that established organisations

serve as incubators for new companies that do business in the same market". According to Ray and Turpin (ibid) these findings are also true for high-technology Japanese entrepreneurs. In a study conducted on high- and low-technology firms, Young and Francis (1991) found that most entrepreneurs (82 %) worked in a company producing a product similar to their own before founding their own company. According to Timmons (1978) venture capitalists prefer to invest in somebody with a proven "track record", i.e. they prefer a potential venture to be headed by an entrepreneur who has a thorough and proven operating knowledge of the proposed new venture.

In contrast to this argument, Birley et al. (1987), Cooper and Dunkelberg (1981), and Hoad and Rosko (1964) found that the majority of entrepreneurs embarked upon new ventures which are not related to the entrepreneurs' previous employers' businesses.

Kent, Sexton and Vesper (1982) argue that experience may have two different effects on entrepreneurial performance. On the one hand it can provide the entrepreneur with a set of guidelines and knowledge conducive to increased performance, but on the other hand it may create habits and perceptions (that are hard to change) which may act as obstacles in the formation of a new venture. It appears from the literature reviewed that the more the new venture is high-technology orientated, the greater the chance that the potential entrepreneur would be making use of technical experience obtained in previous jobs and the more likely it is that his new venture will be similar to that of his previous employer(s).

2.3.4 Type of New Venture

Schumpeter (1979 as cited in Winslow & Solomon, 1987) identified a range of possible alternative combinations which may initiate entrepreneurial action, including (1) new products or services, (2) new methods of production, (3) new markets, (4) new sources of supply and (5) new forms of organisation. The type of new business venture started by the entrepreneur depends, according to Schumpeter, on which of the five alternatives prompted entrepreneurial action.

According to Gartner (1985) researchers thus far have made little or no attempt to compare the type of firm started to determine what difference the type of firm might make in the process of new venture creation. However, Cooper and Dunkelberg (1981) tried to link type of firm started with other variables, such as entrepreneurial background and response to environment.

Some researchers concluded that a definite difference exists between male and female entrepreneurs, in terms of the type of new business venture that the genders embark upon (Cromie & Hayes, 1988; Fernald & Solomon, 1987; Hisrich, 1990; Kalleberg & Leicht, 1991). According to Fernald and Solomon (1987) the majority of male entrepreneurs own companies that are either in the service or construction industries, while most of the female entrepreneurs own companies in the service, retail or wholesale industries. Sexton and Bowman-Upton (1990) found that in general female entrepreneurs were clustered in the service area while male entrepreneurs favoured business in manufacturing. Fagenson & Marcus (1991) and Hisrich (1990) support this view, while Belcourt (1990) found that Canadian female entrepreneurs were predominantly in the service (33 %) and manufacturing (31 %) sectors. Cromie and Hayes (1988)

found that in Britain, females are predominantly engaged in service and clerical occupations. Cromie and Hayes (ibid) concluded that women are segregated into a narrow range of occupations and this limited vocational experience seems to have led to the creation of stereotype female business enterprises. Hisrich (1986) supports these results regarding female entrepreneurs.

Contrary to Cromie and Hayes (1988) and Fernald and Solomon's (1987) findings, Gomolka (1977) and Birley et al. (1987) found no relationship between gender and the industrial sector chosen by entrepreneurs.

Hornaday and Aboud (1971) and Whittaker (1977) concluded that black- and white male entrepreneurs differed in the kind of new business, and the business sector in which they start the new venture. Hornaday and Aboud (1971) found that a high percentage of the white male entrepreneurs in their study were in manufacturing, while almost all of the black entrepreneurs were in sales and services. The authors concluded that the frequency of a "technical specialised idea" as the basis of the development of the enterprise was much greater for white entrepreneurs than for blacks. This difference could probably be attributed to the difference in socio-economic and educational backgrounds.

2.3.5 Sex

The studies on the gender of entrepreneurs which were reviewed appear to be divided in their findings. According to a review by Cromie (1987) definite differences exist between male and female entrepreneurs. These differences were in terms of value profiles (Fernald & Solomon, 1987), entrepreneurial career preference (Scherer, Brodzinski & Wiebe, 1990),

education (Bowen & Hisrich, 1986), age (Birley, Moss & Saunders, 1987), and type of new ventures created by members of the two sexes (Birley et al., 1987; Cromie & Hayes, 1988; Fernald & Solomon, 1987; Hisrich, 1986; Kalleberg & Liecht, 1991). Chrisman, Carsrud, DeCastro and Herron (1990) argue that despite the studies mentioned above, few researchers have attempted to directly compare female and male entrepreneurs in terms of their problems, the assistance received in addressing these problems and the number or successes of venture start-ups.

Other researchers found that on certain variables no significant differences exist between male and female entrepreneurs (Birley et al., 1987; Silver, 1988). No significant differences between the genders appear to exist in terms of employment history, education (Scherer et al, 1990) and financing of the new venture created. A recent study by Sexton and Bowman-Upton (1990) found that female entrepreneurs scored lower on energy level and risk taking than male entrepreneurs, but higher on traits related to autonomy and change. According to the authors these scores indicate that female entrepreneurs are less willing than male entrepreneurs to become involved in situations with uncertain outcomes (risk-taking) and have less of the endurance or energy level needed to maintain a growth-oriented business. Sexton and Bowman-Upton (ibid, p.30) concluded, however, that female and male entrepreneurs were more similar than different, and that the differences found, "would not be expected to affect the person's ability to manage a growing company." Hisrich (1990) supports these concluding remarks of Sexton and Bowman-Upton (1990). However, Harper (1991) comments that in many poor countries women are the most numerous and serious entrepreneurs, even though their businesses are usually very small. Harper (ibid) further argues that women in

poor and developing countries, repay loans more reliably than men and that they use their earnings for the benefit of their families and for reinvestment.

From the earlier research reviewed it became clear that the male entrepreneur has been thoroughly researched (Birley et al., 1987; Evans, 1984; Fernald & Solomon, 1987; Hisrich, 1984; Kent, 1983; Solomon & Fernald, 1990) for characteristics that predict entrepreneurial success, but relatively little is known about female entrepreneurs (Cromie & Hayes, 1988; Hisrich, 1986). The focus during the last decade or so shifted to the characteristics of female entrepreneurs, resulting in thorough research being done on these characteristics (Birley et al., 1987; Bowen & Hisrich, 1986; Cromie, 1987; Cromie & Hayes, 1988; Fagenson & Marcus, 1991; Fernald & Solomon, 1987; Kent, 1983; Moore, 1990).

The more important and elaborate role that female entrepreneurs nowadays occupy in most Westernised economies (Hisrich & Brush, 1984), compels the extension of research into the characteristics and problems of female entrepreneurs to optimise the success rate of start-ups by females. As female entrepreneurship and business ownerships continue to develop, (currently, female-owned businesses are appearing and growing at rates faster than male ownerships in the United States (Fagenson & Marcus, 1991; Hisrich, 1990; Moore, 1990)), researchers will be forced to take into account the differences between the sexes across a wide array of variables. According to Moore (1990) researchers need to examine the degree to which more serious differences, if any, exist between male and female entrepreneurs and whether special training programmes are needed to assess either's special needs. In an earlier attempt to address these questions, Birley et al (1987) compared the backgrounds of, and businesses formed by male and

female entrepreneurs after attending courses on small businesses. One of the most important findings of their study was the extremely high proportion of females who subsequently started businesses after attending a course on small business. These authors suggest that the results of their study indicate that while women may have the motivation to begin business ventures, they also need enabling devices, such as training programmes to put their ideas into effect. Nonetheless, they concluded that, "no strong evidence emerges to support female-specific programs," (Birley et al. 1987, p.34). Chrisman et al. (1990) found in a recent study that female entrepreneurs do not appear to need more assistance than males, nor do they appear to require different types of assistance in the form of training programmes. These authors concluded that, "...although males and females are obviously not exactly alike, no evidence exists that the determinants of venture success or failure differ according to sex," (Chrisman et al. 1990, p.246). In the light of the literature reviewed, considerable progress in our understanding of female entrepreneurs can therefore be expected in the future.

2.3.6 Education

The relationship between education and entrepreneurship is a complex one (Pickles & O'Farrell, 1986). A common belief about entrepreneurs is that they are less educated than the general population (Jacobowitz & Vidler, 1982; Kent, Sexton & Vesper, 1982). Jacobowitz and Vidler (1982) and Day (1986) argued that entrepreneurs are not well-suited by temperament for typical schooling systems, where conformity is at a premium and regulation is given a higher priority than individualism. (The entrepreneur will possibly not fit into a corporate hierarchy for the same reason (Day, 1986)). Entrepreneurs therefore tend to be negatively

orientated towards education, resulting in the education level of entrepreneurs being lower than that of the "average person". Pickles and O'Farrell (1986, p.430) notes: "The probability of entering self-employment is relatively high for those with primary education and peaks for men with incomplete secondary level education, and falls sharply to reach a minimum for males with a postgraduate qualification". More recently Hisrich (1990, p.212) stated in contradiction to the previous authors that "... education is important in the upbringing of most entrepreneurs and that its importance is reflected not only in the level of education obtained but also in the fact that it continues to play a major role as entrepreneurs try to cope with problems and to correct deficiencies in business training."

Ohe et al. (1990) and Brockhaus and Nord (1979) did find that entrepreneurs' level of education was lower than the education of managers. The level of education was found to be significantly less for entrepreneurs than for managers; the entrepreneurs averaged 13,57 years of education, while managers averaged 15,74 years. Supporting these findings, Fraboni and Saltstone (1990) found in their study of first- and second generation entrepreneurs that they had a mean education of 13,04 years. Kent et al. (1982) comments that this lower level of education for entrepreneurs may have limited their ability to obtain challenging and interesting jobs. Lacking the opportunity to obtain challenging and interesting jobs, the entrepreneurs chose to start their own businesses.

However, other studies of entrepreneurs in general and especially entrepreneurs who found high-technology firms have indicated a different educational picture. Cooper and Dunkelberg (1981), Howell (1972), Kent (1983), Kent et al. (1982) and Singh (1983) concluded in their

studies that the education of such entrepreneurs exceeded that of the "average person".

An important characteristic of technological entrepreneurs, according to a number of studies, is that they are indeed well educated (King, 1986; Litvak & Maule, 1973; Thorne & Ball, 1981; Vesper, 1980; Young & Francis, 1991). Thorne and Ball (1981) noted that 85 per cent of the entrepreneurs studied majored in engineering or science for their undergraduate work, while 59 per cent majored in engineering or science for their graduate work. Litvak and Maule (1973) come to the same conclusion in a rather similar study done in Canada and argued that entrepreneurs' formal training had a major impact on the direction of their future entrepreneurial activity. El-Namaki (1988) comments that to run a technological business requires technological skills. This is not surprising given that small businesses are dealing with innovative industrial areas that rely strongly on technical know-how and production theory (King, 1986).

Concerning gender, Birley et al. (1987) noted that no significant differences existed between the levels of education of male and female entrepreneurs. Bowen and Hisrich (1986), Hisrich (1986) and Cromie and Hayes (1988) concluded that female entrepreneurs are relatively well-educated in general. Bowen & Hisrich (1986) summarises the educational level of entrepreneurs in general, and for female entrepreneurs in particular, as shown in Table 3.

TABLE 3 AMOUNT OF EDUCATION OF ENTREPRENEURS

Studies	Findings	Comments
	<u>Entrepreneurs in general</u>	
Brockhaus (1982)	Reviews 4 studies concluding that entrepreneurs tend to be better educated than the general population, but less so than managers.	All samples small and limited to one geographical area or industry.
Cooper & Dunkelberg (1984)	National survey of 1805 small business owners shows that a larger proportion of business starters or purchasers (approximately 64%) have less than a college degree compared to those who inherit or are brought in to run the business (57%)	
Gasse (1982)	Reports 4 studies where entrepreneurs are better educated than general public.	Education level varies with industry (e.g., high tech).
Jacobowitz & Vidler (1982)	Results of interviews with 430 entrepreneurs show that they did not prosper in schools. 30% were high school dropouts. Only 11% graduated from a 4-year college course.	Sample of Pennsylvania and New Jersey entrepreneurs; 11% female

TABLE 3 (Continued)

	<u>Male vs Female</u> <u>Entrepreneurs</u>	
Humphreys & McClung (1981)	54,8% Of the female entrepreneurs were college graduates. Surpasses rate for males and females in general, and for male managers and administrators.	Oklahoma sample of 86 female entrepreneurs from all areas of the state.
Charboneau (1981)	Quotes 1977 Census Bureau study showing that the average female entrepreneur is a college graduate.	Also quotes SBA study with similar finding.
DeCarlo & Lyons (1979)	Female entrepreneurs have more education than the average adult female. Non-minority female entrepreneurs have more education than minority female entrepreneurs.	122 Female entrepreneurs drawn at random in mid-Atlantic states.
Hisric & Brush (1963)	68% of nationwide survey of 468 female entrepreneurs were at least college graduates.	
Mescon & Stevens (1982)	Two-thirds had attended college; 15% had pursued graduate degrees.	Sample of 108 female real estate brokerage owners in Arizona.

TABLE 3 (Continued)

Sexton (1981)	& Kent	F e m a l e entrepreneurs were slightly less educated than female executives (44% and 51% college graduates, respectively). Younger female entrepreneurs were better educated than female executives of companies.	Interviewed 93 women (48 female entrepreneurs) from Texas)
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Obtained from: Bowen, D.D. & Hisrich, R.D. (1986). The female entrepreneur: A career development perspective. Academy of Management Review, 11(2), p. 397.

It is obvious that a wide spectrum of different results have been obtained regarding the educational level of entrepreneurs. For comparison and interpretation of results obtained by different researchers on this biographical variable, it should be noted that the sample used by each researcher needs to be carefully considered for it has a strong determining influence on the findings in this regard. It does seem as though the level of education correlates with the type/kind of entrepreneurial activity undertaken.

2.3.7 Capital Sources of Financing New Venture

Most research on financing new enterprises suggests that personal savings are the most important source of capital (Birley et al., 1987; Cooper & Dunkelberg, 1986; Hoad & Rosko, 1964; Kent et al., 1982; Litvak & Maule, 1973; Thorne & Ball, 1981; Vesper, 1980). After personal savings, funds received from family, friends and other acquaintances appear to make up the balance of the initial start-up capital (Hoad & Rosko, 1964; Litvak

& Maule, 1973; Vesper, 1980). Contrary to these findings Birley et al. (1987) found that finance needed beyond the entrepreneur's own resources, was, by the majority of the subjects studied, raised through banks. Kent et al. (1982) found that apart from the entrepreneur's personal savings private individuals from the local community constituted the most important resource of needed funds.

Van Auken and Carter (1989) argue that the level of initial capitalisation a small business obtains has a significant impact on its success. Litvak and Maule (1973) commented that start-up capital was usually minimal and that venture capital sources (Banks, Small Business Development Corporation, etc.) were seldom successfully tapped in the initial stages of business development. This phenomenon could probably be partly explained by conclusions reached by Day (1986), i.e. that when an entrepreneur finally succeeds with a venture(s) he has usually had two or three business failures behind him/her. He concludes that this is the reason why bureaucrats, who staff financial agencies, view an entrepreneur as careless and irresponsible. Hisrich and O'Brien (1986 cited in Hisrich, 1986) found, in support of Day (1986), that women entrepreneurs had particular problems obtaining credit and overcoming society's belief that women are not as serious as men about business. Sexton and Bowman-Upton (1990, p.30) comment that "... although male and female entrepreneurs possess similar socio-economic backgrounds, motivations, and personality traits, female business owners are subjected to gender related discrimination, especially by financial institutions".

Thorne and Ball (1981) found that the average entrepreneur invested 50% of his net worth in starting his business, that the start-up capital amounted to an

average of only \$650 per current employee and that average percentage ownership by the entrepreneur reported at the beginning was 72%. This gives an indication of the great personal financial risks which are associated with starting an entrepreneurial business.

2.3.8 Immigrants and Minority Groups

The reason that minority groups are considered an ascriptive variable lies in the hypothesis that, if the value system of a major minority group is achievement-orientated, entrepreneurial response will be stronger (Ahwireng-Obeng, 1986). Hisrich (1990) argues that a culture that values the successful creation of new businesses will spawn more company formations than a culture that does not. Hisrich (1990, p.210) states: "... the American culture places a high value on being your own boss, having individual opportunity, being a success on the other hand, successfully establishing a new business and making money is not as highly valued and failure may be a disgrace in the cultures of some countries, such as Ireland and Norway".

According to Gomolka (1977) little is known about the characteristics of members of minority groups who establish small businesses and the nature of the organisations they control. He further states that previous studies on minority entrepreneurs are limited in scope and number. Gomolka (1977) found that in the United States of America minority groups comprise about 17% of the population, but only about 4,3% of the total USA businesses. Whittaker (1977) argues, according to Gomolka, that an examination of the areas in the USA where a large number of black people, American Indians or Spanish-speaking people live, will reveal exceedingly low levels of economic, political and social attainment.

Thus, Gomolka (1977) concludes that poverty, discrimination and ethnic visibility are the obstacles to be overcome in order to establish minority business proprietorship.

However, Hornaday and Aboud (1971) compared white and black entrepreneurs on a number of variables in a study undertaken in the USA. They concluded that it appeared that each of the obtained differences on the characteristics investigated (Length of time in business, marital status, education and type of new venture started), resulted from socio-economic differences or from special considerations in sample selection. Therefore it does not appear that any racial differences among entrepreneurs were evident.

Studies of the nationality of an entrepreneur stress the importance of the situational factor (King, 1986). According to Kent et al. (1982) entrepreneurship is highly identifiable with certain ethnic groups within a country. Approximately 40% of the Chinese-Americans are in business for themselves, as are a similarly high percentage of the Japanese Americans (Kent et al., 1982). Some authors propose that entrepreneurs are more likely to be of "foreign stock", that is, foreign-born or having foreign-born parents (Cooper & Dunkelberg, 1986; King, 1986). A study of technical entrepreneurs in Canada found that 33% were immigrants (Litvak & Maule, 1973). Thus, a hypothesis is that the more immigrants are out of place in their new environment, the more likely it is that they might start an independent venture (Kent et al., 1982).

2.4 RESEARCH DIRECTIONS AND QUESTIONS

Before listing some of the conclusions reached about the directions into which entrepreneurship research should be

going after reviewing the relevant literature on entrepreneurship, it should be said that doubts about the quality of research on entrepreneurship are often expressed (Bygrave, 1989; Gartner, 1989; Hornaday & Churchill, 1987; Mitton, 1989; Moore, 1990; Smith, Gannon & Sapienza, 1989; Solomon & Fernald, 1990; Stevenson & Jarillo, 1990). Criticisms revolve around the inadequacies in the paradigms used (Bygrave, 1989), the lack of theory (Carsrud, Olm & Eddy, 1986), the absence of a paradigm specifically developed for entrepreneurship research (Bygrave, 1989; Moore, 1990), inadequate application of theory from related fields (Hisrich, 1990; Hornaday & Churchill, 1987), under-utilisation of statistical methodology (Kemery, 1988; Moore, 1990; Wortman, 1987) and over-reliance on statistical sophistication (Bygrave, 1989). Suggestions for improving this state of affairs are made by several authors (Bygrave, 1989; Carsrud, Olm & Eddy, 1986; Gartner, 1989; Gartner, 1990; Marino, Castaldi & Dollinger, 1989; Moore, 1990; Smith, Gannon & Sapienza, 1989; Solomon & Fernald, 1990). With regard to future studies in the field of entrepreneurship the first conclusion simply seems to be: Researchers must strive to do methodologically better research in future - in terms of having a stronger frame of reference, better defined constructs, more clarity on the theory, building on others' work, using data gathering and analytical methods appropriately.

One controversy which appears in the literature in various forms is whether entrepreneurship should be studied by studying the entrepreneurship process or by studying the characteristics of entrepreneurs. Gartner (1988), Peterson (1981) and Stevenson & Jarillo (1990) are examples of protagonists for studying the process while Carland, Hoy and Carland (1988) appear to be convinced that further studies on the characteristics of

entrepreneurs will be the most profitable way to gain further understanding of entrepreneurship. The individual who started a large part of it all (as far as characteristics and development of entrepreneurs are concerned), McClelland (1987), seems to be still hacking away at the problem of determining the characteristics of entrepreneurs - if cavalier and innovative research like McClelland's can be called hacking. McClelland (1987) seems to be concentrating on the differences between successful and unsuccessful entrepreneurs, which represents an analytical step forward from studying entrepreneurs i.e. anybody who starts or owns a business.

Underlying the controversy as to what should be studied seems to be a difference of opinion about whether potential entrepreneurs (as McClelland (1987) asserted) formed only a very small part of the population of a country and therefore must be identified, developed and nurtured or are plentiful but cannot always appear as entrepreneurs because of societal factors not favouring entrepreneurship or economic incentives for being an entrepreneur not being available (Peterson 1981, p.69-73).

According to Boshoff, Schutte and Bennett (1990) if the assumption is that potential entrepreneurs are scarce, then the focus of research will be on the identification and development (creation) of entrepreneurs to increase the quantity and quality of this resource. If the assumption is that entrepreneurs are readily available, but are hampered by circumstances, then the focus should be on how to increase the demand emanating from society and how to make opportunities for entrepreneurship more readily available. Differences among societies are probably present, both in the number of available entrepreneurs and the obstacles preventing entrepreneurial businesses from developing - both potentially fertile areas for research.

Further work regarding the characteristics of entrepreneurs should probably be aimed at greater precision as to the definition of who are entrepreneurs. One clear distinction should be to determine whether successful or unsuccessful entrepreneurs are being studied or whether, for instance, the differences between successful and unsuccessful entrepreneurs are to be identified (Boshoff et al., 1990). Gartner (1988) makes the point that studies in this area could profitably be directed at industry differences in the characteristics of entrepreneurs. That entrepreneurs are not the only variable in the entrepreneurship phenomenon is indicated by Gartner (1985) who provides a model of the variables to be studied - entrepreneurs, the entrepreneurial process, the environment and the organisation(s) involved. Carland, Hoy and Carland (1988) indicate that, in their opinion, a worthwhile approach should be to distinguish more carefully between small business owners and entrepreneurs in the pursuit of the characteristics of entrepreneurs. Chrisman (1989) and Chrisman et al. (1990) propose the study of the various types and value of assistance provided by outsiders to aspiring entrepreneurs and their new venture's subsequent performance. As female entrepreneurships and business ownerships continue to develop at rates faster than male ownerships (Belcourt, 1990), Moore (1990) argues that researchers need to take into account the differences between the sexes across a wide array of variables. Further comparative studies would do far better to concentrate on behaviours (Gartner, 1988) and strategic factors (Hofer & Sandberg, 1987) affecting the performance of male- and female-owned ventures, rather than merely comparing the characteristics of the entrepreneurs themselves (Chrisman et al., 1990). However, Chrisman et al. (1990) feel that there is still a need for similar comparative studies of minority and non-minority entrepreneurs.

It seems as if the study of biographical characteristics of entrepreneurs, successful and unsuccessful is also still quite viable. In a South African study Nicholson and Boshoff (1989), basing their analysis on samples of commercial and subsistence black farmers, indicated that the two groups could be distinguished on the basis of biographical variables. This promising result, based on rather primitive analyses, should probably at least be extended to other samples as will be attempted in this thesis.

A further research direction seems to be the study of the transition process between the stage of (entrepreneurial) creation of a business and the stage of a professionally managed small business (Charan, Hofer and Mahon, 1980; Cranston and Flamholtz, 1986). This seems to be especially important in the light of the role of the founder in creating the culture of an organisation (Schein, 1983) and in the light of the high failure rate of businesses brought into being by entrepreneurs (Timmons, 1989).

An obvious research direction is an investigation into the circumstances which enhance or impede the development and functioning of entrepreneurship and entrepreneurial businesses. This seems to be directly in line with Peterson's (1981) view that the supply of entrepreneurs is not generally a problem, but that opportunity for entrepreneurs to start their own businesses can be a problem. Societal norms, restrictive regulations and governmental attitudes seem to be the variables to get attention in such studies.

From a methodological point of view meta-analyses of the available findings seem to be overdue. Such an analysis

will possibly yield useful understanding of the contradictions in the present findings and give a clearer picture of the present state of our knowledge.

Finally, entrepreneurship should possibly be studied in other than business settings. Little is known about the phenomenon in such settings and there seems to be a tacit assumption that entrepreneurs tend to flock to business settings (McClelland, 1961). Therefore the question is firstly whether this is so or not. Does entrepreneurship occur in other than business environments (Stevenson & Jarillo, 1990), what are the forms it takes and which kind of entrepreneurs function in such settings? These seem to be useful research questions for the future (Etzkowitz, 1983; Louis et al, 1989; Mazzoni, 1987).

Entrepreneurship seems to be a field with many unresolved issues. With the current worldwide emphasis on individuality and private enterprise research in this field should flourish (Moore, 1990).

The research questions formulated for this study as derived from the research directions sketched, are as follows:

1. Do significant differences exist between successful small business owners and unsuccessful small business owners on biographical and business variables?
2. Do significant differences on biographical and business variables exist between the groups whose loan applications were granted and the individuals whose loan applications were rejected by the venture capitalist?

3. Can the level of success of small business owners' businesses be predicted by means of biographical and business variables?

Therefore, this thesis will aim to bring more clarity to the phenomenon of entrepreneurship by concentrating on the differences, if any, between successful and unsuccessful small business owners in terms of biographical and business variables.

CHAPTER 3

THE VALUE OF BIOGRAPHICAL AND BUSINESS DATA IN THE SELECTION PROCESS

This thesis is concerned with the prediction of successful and unsuccessful entrepreneurs by means of biographical and business predictors. The ultimate aim of the thesis is to test whether venture capitalists and other organisations supporting entrepreneurship in South Africa can distinguish between potentially successful- and unsuccessful entrepreneurs by means of biographical and business predictors. Therefore this thesis strives to improve the process implemented by venture capitalists and other organisations in the selection of applicants for financial assistance in new venture creation within South Africa.

In this chapter selection as a process and the factors influencing this process will be broadly defined and reviewed. As this thesis is primarily concerned with the use of biographical and business data as predictors, attention will be given to the value and application of this aspect in the selection process.

3.1 INTRODUCTION

The term "personnel selection" has been in use for many decades and since the beginning of this century, psychologists have been intensively concerned with selection (De Wolff & Van den Bosch, 1984; Hale, 1986). According to Korman (1978) and Landy (1986) industrial psychology as a profession, devoted to the achievement of organisational goals, has its historical support in, and still continues to be prominently identified with the personnel selection process.

According to Korman (1978), industrial psychology has made major contributions in two areas to the personnel selection

process. Firstly, in the development of psychological measures which predict job performance, and secondly in the development of appropriate methodologies for evaluating whether or not a given predictor is actually operating effectively. The validation of selection process and devices will be discussed later in this chapter.

The importance of implementing sound selection procedures in an organisation is highlighted by Carrell and Kuzmits (1986, p.125) when they remark that: "If the selection process is well administered, the employee will be able to realise personal career goals and the organisation will benefit from a productive, satisfied employee." Werther and Davis (1985) argue, in support of Carrell and Kuzmits (1986), that improper selection can crush individual hopes and have a negative effect on other personnel activities.

An employee's performance on the job depends, among other things, on his ability and motivation to perform the job. Therefore, maximising employees' future performance is one of the objectives of the selection process (Carrell and Kuzmits, 1986). Carrell and Kuzmits (1986) and Werther and Davis (1985) conclude that selection is central to the success of personnel management and the organisation, and the entire selection process hinges on determining which applicants have the greatest potential and motivation to be successful employees.

3.2 DEFINITION OF SELECTION

Gerber (1992, p.184) defines selection as, "... the making of a choice from a number of candidates to identify those who will, according to the evaluation of the person responsible for selection, best meet the set performance standards." Carrell and Kuzmits (1986, p.124) similarly define selection as: "... the process of choosing qualified individuals who are available to fill positions

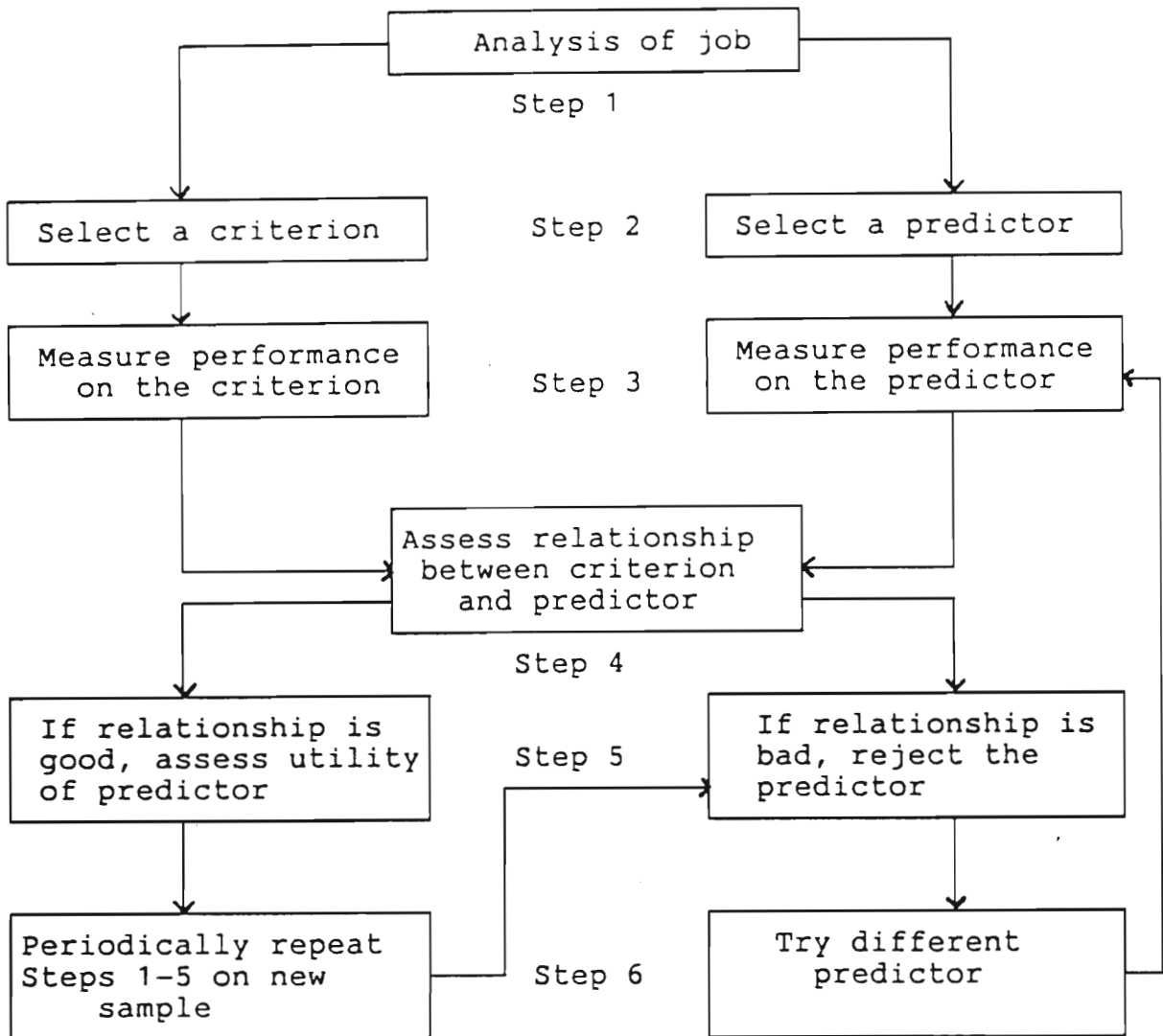
in an organization ... choosing the best applicant to fill the position".

Werther and Davis (1985, p.176) see selection as a process and define it follows: "The selection process is a series of specific steps used to decide which recruits should be hired". Muchinsky (1987, p.180) defines selection also as: "... the process of choosing for employment a subset of applicants available for hire". From the literature reviewed and the definitions cited it appears that researchers fundamentally agree on the essence of selection. The researcher can conclude with Muchinsky's (1987, p.180) view that: "Selection is predicated on the premise that some applicants are better suited for the job than other, and its purposes is to identify these 'better' applicants".

3.3 SELECTION PROCESS

The selection process consists of several steps to decide which recruits should be hired (Gerber, 1992; Muchinsky, 1987; Schultz & Schultz, 1986; Werther & Davis, 1985). In contrast, Carrell and Kuzmits (1986) view the selection process as a process that pulls together organisational goals, job designs, and performance appraisals as well as recruitment and selection.

According to Werther & Davis (1985) the selection process begins when recruits apply for employment and ends with the hiring decision. The steps in between match the employment needs of the applicant and the needs of the organisation. For the purpose of this thesis attention will primarily be given to the classic selection model, as shown in figure 1.

FIGURE 1 THE CLASSIC SELECTION MODEL

Obtained from: Muchinsky, P.M. (1987). Psychology Applied to Work : An Introduction to Industrial and Organizational Psychology (2nd ed.) (p.208). Chicago Illinois :The Dorsey Press.

For the purpose of this thesis each of the six steps of the classic selection model (figure 1) will be briefly discussed as derived from Muchinsky (1987, p.209-210).

Step 1: Analysis of the Vacant Job(s). Using job analysis procedures, the vacant job(s) is/are studied to find the knowledge, skills, and abilities needed for job success.

Many problems in personnel selection stem from the fact that there is often inadequate understanding of the job and its requirements.

Step 2: Selection of Criterion and Predictor. This step involves two procedures. First, on the basis of the job analysis, a criterion of job success is chosen. As always, the criterion must be a sensitive indicator of work quality. Similarly, a predictor must be chosen. However, the choice of predictor need not be as carefully considered as the choice of criterion. If one predictor does not turn out to be useful, another one can always be selected.

Step 3: Measuring Performance. After the criterion and predictor have been chosen, the worker's performance is measured on both variables. This can be done in one of two ways. One way is to record current employees' job performances and then give them the predictor test (for the purpose of testing the test). The second way is to give the predictor to all job applicants, hire all the applicants, and some time later collect criterion data on them. This is the difference between concurrent and predictive criterion-related validity.

Step 4: Assessing the Predictor's Validity. The fourth step is to determine if differences in predictor scores correspond with differences in criterion scores; that is, does the predictor have validity? This procedure is done by means of statistical analysis, in most cases by computing a correlation coefficient. If the predictor has validity, there will be some appreciable relationship between predictor and criterion scores. If the predictor is lacking in validity, there will be no correspondence between the two sets of scores.

Step 5: Determining the Predictor's Utility. If the predictor has statistical validity, the next step is to

determine just how useful it will be in improving the quality of the work force. The utility of a predictor is determined primarily by its validity, the selection ratio, the base rate, and cost. If the predictor has no validity, there is no point in analysing its utility, since utility is most directly influenced by validity.

Step 6: Reanalysis. Over time, jobs can be changed, applicant pools can be altered, predictors can lose validity, invalid predictors can become valid, and so on. Any personnel selection programme should be periodically reevaluated to see if changing employment conditions have altered the predictor-criterion relationship. This should be done at least every five years.

In view of the classical selection model stated, this thesis will attempt to select biographical and business predictors, measure their performance and assess the biographical predictors validity and utility in their prediction of a success-related criterion for entrepreneurs. The researcher concludes with Schultz and Schultz's (1986) view that the selection procedures may be rather costly, but, in the long run, they are less costly than selecting the wrong person for the job.

3.3.1 Guidelines on selection procedures

The early guidelines for fair selection procedures were complex and difficult for practitioners to understand (Carrell and Kuzmits, 1986). The guidelines discussed here, are the general guidelines to which practitioners in America have to adhere during the selection process as stipulated in the literature reviewed. Guidelines for the use of personnel practitioners in selection procedures in South Africa are discussed by Taylor and Radford (1986). The South African Medical and Dental Council also stipulates certain guidelines for personnel

practitioners in the use of psychologically based tests during selection procedures. In essence the guidelines to be discussed in this chapter concern the validity and reliability of measures and tests used in the selection process. The importance of criteria and predictors in the selection process will also be discussed.

3.3.1.1 Criteria

A great deal has been written on criteria, for example the difference between hard- and soft criteria (Muchinsky, 1987) and the multidimensionality of criteria (Siegel & Lane, 1982; Muchinsky, 1987).

Criteria are best defined as evaluative standards (Muchinsky, 1987; Siegel & Lane, 1982), but the selection of an appropriate criterion is complex (De Wolff & Van den Bosch, 1984; French, 1987; Maier & Verser, 1982; Schmitt & Robertson, 1990). French (1987) stresses that the personnel practitioner immediately encounters a number of complications in selecting a criterion. French (ibid, p.243) elaborates on these complications for example, when he asks the following questions: "If we want to decide on a criterion of success for a salesperson, should we use gross sales per year, number of new customers per year, or net profit on the items that were sold? If we use success ratings by supervisors as a criterion of success, are the ratings of the various supervisors objective and free from personal biases? How valid is the criterion, that is, to what degree is it related to contributing to the goals of the enterprise?" These are only a number of questions personnel practitioners are faced with in selecting a criterion for a selection process.

The purpose of a criterion in the selection process is to measure differences between persons or groups and must therefore be scored and that score must be interpretable (Siegel & Lane, 1982). The quality of judgements of the measured differences as reflected in the score obtained is determined by the adequacy and appropriateness of the criteria (Muchinsky, 1987).

The researcher can conclude with Siegel and Lane's (1982) comments that since criteria are the dependent variables of interest whenever behavioural research is undertaken, they must satisfy the requirements of any psychometric device. Therefore, criteria must be appropriate, free from bias and reliable.

3.3.1.2 Predictors

A predictor is any variable used to forecast a criterion (Muchinsky, 1987). According to Muchinsky (ibid) there is no limit to the variables that may be used to forecast a criterion, but the author also stresses that although the identification of predictor variables is valuable, they are always secondary in importance to criteria. Korman (1978) argues that one of the most important problems that a personnel practitioner has to face in a selection process is to choose a measure/predictor which actually measures the relevant psychological variable/criterion which he is proposing is demanded by the job. Korman (ibid, p.201) states that: "...the development of measures of characteristics that will be good predictors of performance has been a primary concern of industrial psychologists ...". Muchinsky (1987) concluded that if we think of criteria as the end point of an empirical journey, predictors can be considered as the roads by which to reach the criteria. Therefore, predictors are merely means to an end - the criterion.

Predictor variables can be assessed in terms of their quality. If personnel practitioners would think of some features of a good measuring device, consistency and accuracy should come to mind. According to Muchinsky (ibid) the quality of a measuring device is judged by two psychometric criteria: reliability and validity. Therefore we can conclude that if a predictor is not both valid and reliable, it will be useless.

3.3.1.3 Reliability and Validity

According to Muchinsky (1987) the concepts of reliability and validity are equally relevant to criteria and predictors. From the literature reviewed it appears that a great deal of interest has been generated in the concepts of reliability and validity (Carrell & Kuzmits, 1986; De Wolff & Van den Bosch, 1984; French, 1987; Gerber, 1992; Korman, 1978; Maier & Verser, 1982; Muchinsky, 1987; Schmitt & Robertson, 1990; Schmitt, Gooding, Noe & Kirsch, 1986; Siegel & Lane, 1982; Werther & Davis, 1985.)

3.3.1.3.1 Reliability

A predictor or criterion's reliability is its consistency or stability (French, 1987; Muchinsky, 1987), therefore it should yield the same estimate on repeated use (Maier & Verser, 1982). Gerber (1992, p.192) in support of the previous authors states that: "Reliability means consistency, in other words, the consistency of scores obtained by the same test persons when retested, doing the same or an equivalent test". According to French (1987) and Muchinsky (1987) three major types of reliability are used in psychology to assess the consistency or

stability of the measuring device, (1) Test-retest reliability, (2) Equivalent-form reliability and (3) Internal consistency reliability. For the purposes of this thesis each of the three major types of reliability will be briefly discussed.

3.3.1.3.1.1 Test-Retest Reliability

Muchinsky (1987, p.121) states that "The simplest way to assess a measuring device's reliability is to measure something at two points in time and compare the scores. The correlation of these two sets of scores is called a coefficient of stability, because it reflects the stability of the test over time. As a test cannot ever be too reliable, it is accepted as a rule that coefficients around $+0.70$ are professionally acceptable although some frequently used tests have test-retest reliabilities of only in the $+0.50$ range".

3.3.1.3.1.2 Equivalent-Form Reliability

Muchinsky (1987, p.122) also states that "this type of reliability is known as parallel or equivalent-form reliability. Here a psychologist designs two forms of a test to measure the same thing and gives both to a group of people. The two scores for each person are then correlated. The resulting correlation, called a coefficient of equivalence, reflects the extent to which the two forms are equivalent measures of the same concept".

3.3.1.3.1.3 Internal Consistency Reliability

According to Muchinsky (1987, p.122) "the internal consistency of a test reflects the extent to which it has a homogeneous content. In calculating

internal consistency reliability, a method called split-half reliability may be used. Here a test is given to a group of people. When the personnel practitioner scores these tests, the items are divided in half into odd and even-numbered items. Each person thus gets two sets of scores and these scores are correlated. If the test is internally consistent, there should be a high degree of similarity in the responses to the odd- and even-numbered items. Because this method computing reliability divides a test in half, the personnel practitioner is really computing the reliability of only half the test. Therefore it is necessary to apply a statistical correction procedure to estimate the reliability of the entire test. The most common statistical correction procedure used is the Spearman-Brown formula".

3.3.1.3.2 Validity

A valid criterion or predictor is one that yields "correct" estimates of what is being assessed, therefore validity refers to the accuracy and precision of a measurement (Carrell & Kuzmits, 1986; French, 1987; Korman, 1978; Maier & Verser, 1982; Muchinsky, 1987; Werther & Davis, 1985).

Siegel and Lane (1982, p.113) are more elaborate in their view when they state: "A valid test or other measure (1) accurately reflects the characteristic it purports to measure and (2) permits reasonably accurate predictions or inferences about some other independently obtained measure". Muchinsky (1987) also comments that validity of a measure depends on the use of the psychological device, therefore validity refers to a measure's appropriateness for predicting a criterion. For example, a given test

may be highly valid for predicting employee productivity but totally invalid for predicting employee absenteeism. The process of statistical validation requires the computation of the correlation between scores on the test and scores on the criterion (French, 1987). The correlation coefficient then becomes the measure of validity.

French (1987) argues that judgement is required to determine how large a correlation coefficient should be to demonstrate that the selection device is useful. According to Muchinsky (1987) a desirable validity coefficient is in the +.30 to +.40 range and that validity coefficients under +.30 are not uncommon, but validity coefficients of over +.50 are rare.

By squaring the size of the correlation coefficient (r), the personnel practitioner can estimate how much variance in the criterion can be accounted for by using the predictor (French, 1987; Muchinsky, 1987). Using the example of French (1987, p.243), the above can be better demonstrated: "... if the correlation coefficient between a selection device and successful job performance is .40, then $(.40)^2 = .16$, or 16 per cent of the variance in performance can be predicted by the selection device".

There are several different ways of assessing validity (Gerber, 1992; Muchinsky, 1987; Werther & Davis, 1985).

Figure 2 summarises the most common approaches to validation.

FIGURE 2 AN EXPLANATION OF COMMON APPROACHES TO TEST VALIDATION

EMPIRICAL APPROACHES

Empirical approaches to test validation attempt to relate test scores with a job-related criterion, usually performance. If the test actually measures a job-related criterion, the test and the criterion exhibit a positive correlation between 0 and 1,0. The higher the correlation, the better the match.

- * **Predictive validity** is determined by giving a test to a group of applicants. After these applicants have been hired and mastered the job reasonably well, their performance is measured. This measurement and the test score are then correlated.
- * **Concurrent validity** allows the personnel department to test present employees and correlate these scores with measures of their performance. This approach does not require the delay between hiring and mastery of the job.

RATIONAL APPROACHES

When the number of subjects is too low to have a reasonable sample of people to test, rational approaches are used. These approaches are considered inferior to empirical techniques, but are acceptable validation strategies when empirical approaches are not feasible.

- * **Content validity** is assumed to exist when the test includes reasonable samples of the skills needed to successfully perform the job. A typing test for an applicant that is being hired simply to do typing is an example of a test with content validity.
- * **Construct validity** seeks to establish a relationship between performance and other characteristics that are assumed to be necessary for successful job performance. Tests of intelligence and scientific terms would be considered to have construct validity if they were used to hire researchers for a chemical company.

3.4 BIOGRAPHICAL DATA

There are specific devices/measures that are widely used in employee selection such as application forms, interviews, selection tests, physical examinations, and reference checks (Carrell & Kuzmits, 1986; French, 1987; Gerber, 1992; Maier & Verser, 1982; Muchinsky, 1987; Schultz & Schultz, 1986; Siegel & Lane, 1982; Werther & Davis, 1985). Since this thesis is primarily concerned with biographical and business data as predictors, a short review of these specific measures will therefore be given.

The collection of biographical data on the backgrounds of job applicants is a common method of selection (Schultz & Schultz, 1986). Biographical data have been known to be of great value in predicting performance in a variety of jobs (Cascio, 1976) for example, taxicab drivers, secretaries, aeroplane pilots and managers (McDaniel, 1989).

To the extent that personal history and past experience can influence subsequent behaviour, these factors for example previous work experience, educational background and quality of performance on earlier jobs can be used to predict future behavior (Schultz & Schultz, 1986; Siegel & Lane, 1982). This kind of useful biographical data is elicited by an application form, that is, on which questions accurately differentiate those candidates who will do well from those who will perform poorly on the job in question (Maier & Verser, 1982; Schultz & Schultz, 1986). Therefore an application form can be used as a selection device on the basis of the information presented (Muchinsky, 1987).

In contrast, French (1987) and Carrell & Kuzmits (1986) view the purpose of the application form as being to secure desired information from an applicant in a standardised way

convenient for evaluating the applicants qualifications and to be used as a starting point during an interview.

However, although application forms vary somewhat from one organisation to another, they are almost universally used (Gerber, 1992; Muchinsky, 1987). Mitchell and Klimoski (1982) state that the development of empirically keyed application forms has helped to reduce training failure rates and early turnover by more than fifty per cent. Drakeley, Herriot and Jones (1988) found in their study that validities of scored biographical data for the prediction of training success were equal to those of four cognitive ability tests and an overall assessment centre rating. They also found that biographical data predicted voluntary turnover at a relatively low level ($r = .24$) whereas none of their other predictors did. Cascio (1976) reports the successful use of an application form to reduce turnover among clerical personnel from an initial level of forty-eight per cent to twenty-eight per cent within the first year. The items in Cascio's (1976) study which survived both the item analysis and subsequent cross-validation concerned were: age, marital status, children's ages, education, tenure on previous job, previous salary, location of residence, home ownership and length of time the applicant was living at the present address. Russell, Mattson, Devlin and Atwater (1990) conclude that biographical data have shown the ability to capture systematic, enduring differences between subgroups of people.

Muchinsky (1987) has said that if academy awards were given for the most consistently valid predictor, then biographical data would be the winner. Of all the predictors used to forecast job performance, biographical data have consistently shown the greatest validity, and what is most remarkable about this finding is that it occurs across wide differences between people, jobs and

criteria (Muchinsky, 1987; Rothstein, Schmidt, Erwin, Owens & Sparks, 1990). According to Shackleton and Anderson (1987) studies of the criterion-related validity of biographical data have continued to show impressive results, supporting the statement by Muchinsky quoted above.

The typical procedure in determining the validity of biographical data reported on the application form is to try to discover a correlation between the responses and the success of applicants on the jobs (French, 1987; Schultz & Schultz, 1986; Siegel & Lane, 1982). Such a study would therefore require that individual items on the application form be reduced to a quantitative or dichotomised score. Therefore, Muchinsky, (1987, p.154) best illustrates the procedure when biographical data is used for selection purposes: "A criterion of interest is chosen, usually productivity, turnover, or absenteeism. The sample of current employees may be divided into two groups (high productivity - low productivity, high-turnover - low turnover, or high absenteeism - low absenteeism). Management usually decides what constitutes 'high' and 'low' performance. The next step is to see if the high and low criterion groups differ in terms of the characteristics of the members. If the responses to some biographical questions occur far more often in one group, that question can be considered predictive of job performance". Muchinsky's comments seem to imply a possible log-linear analysis of relevant biographical characteristics in determining the validity of biographical data.

The literature reviewed is filled with examples of useful applications of biographical data (Gerber, 1992; Muchinsky, 1987; Russell et al., 1990; Siegel & Lane, 1982). An example of biographical data's high validity is supported by Cascio's (1976) study where he reports validity coefficients of 0,77 and 0,79 for predicting the

turnover of white and black female workers respectively as clerical employees at a large insurance company in the United States.

A possible problem encountered with the use of biographical data is the question of how truthful people are in their responses. Cascio (1975) reported a correlation of 0,94 between self-reported information on an application form and the subsequently verified answers to the same questions. Therefore it appears that people do not supply untruthful information on application forms (Maier & Verser, 1982; Muchinsky, 1987; Siegel & Lane, 1982). Siegel and Lane (1982, p.146) offers a probable explanation for this phenonemon: "The possibility always exists, as far as an applicant is concerned, that the prospective employer will check upon the veracity of the information recorded on the application form".

A problem encountered with the studying of biographical data is that researchers studying biographical data as predictors, need large sample sizes for it takes a very large sample size to identify biographical items that will be stable and valid predictors of job success (Muchinsky, 1987). However, most organisations do not have the necessary large samples to develop their own biographical data scale, and thus generalisably valid biographical data scales are the only ones they can use (Rothstein, Schmidt, Erwin, Owens and Sparks, 1990).

When biographical data are compared to other personnel selection methods as depicted in figure 3, biographical data appear to be one of the better and more valid selection methods.

FIGURE 3 ASSESSMENT OF NINE PERSONNEL SELECTION METHODS ALONG FOUR EVALUATIVE STANDARDS

Selection Method	Evaluative Standards			
	Validity	Fairness	Applicability	Cost
Intelligence tests	Moderate	Moderate	High	Low
Aptitude and ability tests	Moderate	High	Moderate	Low
Personality and interest tests	Moderate	High	Low	Moderate
Interviews	Low	Moderate	High	Moderate
Work samples	High	High	Low	High
Situational exercises	Moderate	(Unknown)	Low	Moderate
Biographical information	High	Moderate	High	Low
Peer assessments	High	Moderate	Low	Low
Letters of recommendation	Low	(Unknown)	High	Low

Obtained from: Muchinsky, P.M. (1987). Psychology Applied to Work : An Introduction to Industrial and Organizational Psychology (2nd ed.) (p.162). Chicago, Illinois : The Dorsey Press.

According to French (1987) sufficient research has been done to indicate that studies on the validity of the application form by individual firms can result in improved data gathering and more effective selection of employees. The researcher concludes with the findings of Rothstein et al. (1990) that biographical data are capable of capturing general characteristics of people that are conducive to the

success or failure on the job in a wide variety of settings, organisational climates and technologies.

Therefore, the aim of this study is to identify biographical and business predictors that will distinguish between potentially successful and unsuccessful entrepreneurs.

CHAPTER 4

METHODOLOGY

This chapter covers the method of investigation used in the study. Firstly, the sample drawn will be described along with the sampling procedure. The demographic characteristics and details of the sample will also be given. Secondly, the proposed statistical analysis of the data will be presented.

4.1 SAMPLE

4.1.1 Sample size

In research the minimum acceptable sample size is largely determined by the anticipated statistical analysis to be implemented in solving the research questions (Emory, 1985). For example, the building of prediction models, a minimum of 10 respondents per identified predictor variable (as discussed later in this chapter), is required. Thus, as eventually a total of 30 predictor variables were included in the study, a minimum of 300 respondents were needed to accomplish the proposed statistical analysis. It was therefore decided to include all usable respondents within the identified time-span (as later defined) of loans granted to small business owners by the venture capitalist. This would ensure that the biggest range possible of different kinds of small business owners were included in the study.

The time-span decided upon was dictated by the venture capitalist's financial year, which commences in April of each year and ends in March. After preliminary examination of the records of the venture capitalist concerned and bearing in mind the minimum of respondents needed (300), it was decided to cover a

two-year period. The time-span decided upon was 1 April 1985 - 31 March 1987, the reasons for selecting this specific time-span being:-

- * there were not enough respondents during one financial year of the venture capitalist to meet the required minimum sample size
- * for further analytical purposes such as cross-validation, the time-span was subdivided into loans granted during two 12-month periods viz.
1 April 1985 - 31 March 1986 and
1 April 1986 - 31 March 1987,
- * Sufficient time had to be allowed for a small business venture to prove itself successful or unsuccessful (this resulted in the oldest loan granted being 51 months old and the youngest loan granted being 27 months old on the day of reckoning, 30 June 1989).

4.1.2 Sampling procedure

Sampling was accomplished in four stages. Firstly, the permission and cooperation of the venture capitalist had to be obtained. This was achieved by:

- * A personal visit to the regional manager of the venture capitalist describing the aims of the study and asking for his/her cooperation, and
- * A letter from the Graduate School of Management of the University of Pretoria to the venture capitalist guaranteeing utmost confidentiality in the process of gathering and analysing data from the archives of the venture capitalist.

Total cooperation and assistance by the venture capitalist to the researcher was thus obtained.

Secondly, a decision had to be made as to which of the six different financing schemes in operation within the venture capitalist could be incorporated into the present study.

The venture capitalist has six different financing schemes in operation through which financial support is extended to would-be small business owners. Loan applications received are assigned to the different schemes according to the extent of financial assistance required and the purpose the financial assistance would serve.

In terms of the above the venture capitalist has devised two "application forms". One is applicable to financial schemes that cater for the relatively small forms of financial assistance required. The other is devised to cater for medium to large sums of financial assistance required.

The application form devised for the smaller amounts is nothing but a shortened version of the other application form devised for the larger sums. Therefore the shortened application form contains less biographical and business predictor variables than the second more elaborate one.

Unfortunately, because of the absence of some critical predictor variables in the shortened application form, the three financial schemes that cater for the smaller sums of financial assistance had to be omitted from the study. For the purpose of this study only clients that have completed the second and more elaborate application form were included. Therefore, one of the shortcomings of this study can be attributed to the omission of granted small loans which forms the core of the three financial schemes omitted.

Thirdly, the data captured within the archives of the venture capitalist had to be gathered. This was accomplished by the researcher and research assistants visiting the archives of the venture capitalist. These archives are located at the regional head office of the venture capitalist and its area offices in Middelburg (Tvl), Nelspruit and Pietersburg. There the relevant and usable data was captured directly on micro-computers by means of the Lotus 123 software package. Therefore the study was done on "available materials" (Kerlinger, 1986, p. 468) or as Bailey (1982) and Emory (1985) claim on secondary data sources. Recently, Chrisman et al. (1990) similarly used secondary data sources (Small Business Development Centre files) in a study of entrepreneurs. Cascio (1976), Fried and Hisrich (1988) and Marino et al. (1989) argue for a greater utilisation of available secondary data sources in the research of entrepreneurship with venture capitalists as a favourable source of secondary data sources.

Possible usable predictor variables/information within the files of the venture capitalist on clients were then identified. Bearing in mind the biographical variables that have already been researched before (as discussed in Chapter 2) and criteria that distinguished between successful and unsuccessful small business owners had to be developed. The information on potential predictor variables identified, as depicted in Table 4, was obtained from the files of the venture capitalist. The predictor variables decided upon were then classified into biographical predictor variables and business predictor variables. Biographical predictor variables are concerned with information related directly to the entrepreneur, while business predictor variables

depict information related to the venture of the entrepreneur as shown in Table 4. Pickles and O'Farrell (1986) identified similar biographical and business predictors. Class variables are discussed more elaborately later in this chapter.

TABLE 4 BIOGRAPHICAL/BUSINESS AND CLASS PREDICTOR VARIABLES
EXTRACTED FROM THE ARCHIVES OF THE VENTURE CAPITALIST

BIOGRAPHICAL PREDICTOR VARIABLES

1. Gender
2. Language preference (Afrikaans/English)
3. Race
4. Nationality
5. Resident/Non-resident status
6. Residential area
7. Age
8. Education level
9. Apprenticeship/clerkship
10. Employment history
11. Marital status
12. Number of dependants
13. Criminal record
14. Sequestration record

BUSINESS PREDICTOR VARIABLES

1. Number of loans
2. Business form
3. Amount borrowed
4. Interest rate
5. Purpose for which loan is required
6. % Which small business owner personally contribute
7. Economic sector
8. Age of "existing businesses"
9. Number of existing employees
10. Number of additional employees
11. Risk classification

TABLE 4 (continued)

12. Security cover
13. Status of small business owner in the business
14. Small business owners' % royalty in the business
15. Venture capitalist financing scheme involved
16. Development state of business

CLASS VARIABLES

1. Year group
2. Account status
3. Account number

The sample can therefore be described in terms of two sets of parameters i.e. firstly in terms of the characteristics of the individual small business owners and secondly in terms of the ventures/businesses in which these small business owners are involved. The class variables were devised for the purpose of developing a criterion to distinguish between successful and unsuccessful small business owners. The class variables were also devised for implementation in statistical analysis done later. The venture capitalist's files on clients from which the data was extracted consist of all documentation and correspondence on the client since the date of application. The identified predictor variables for this study as depicted in Table 4 were extracted from the following sections of each file:

- * The original application form
- * Addendum "A"
- * Business advisor's report

Most biographical information was obtained from the original application form while most of the business information was extracted from addendum "A" of each file. If a predictor variable was incomplete or vague, it could be solved by consulting the business

advisor's report which is an elaborated report of the total application form.

The identified predictor variables were coded and then entered into the micro-computers. The codification of these variables are depicted in Appendix A.

Finally a criterion had to be devised to distinguish between successful and unsuccessful small business owners for analytical purposes later. The account status of these small business owners in the venture capitalists financial records as on 30 June 1989, served as a criterion.

The venture capitalist classifies its clients into four different accounts, being:

1. Bad debts (BD)
2. Legal control (LC)
3. Current account (CA)
4. Paid-up loans (PL)

For the purpose of this study the first two (bad debts and legal control) are considered to indicate failure, while the last two (current account and paid-up loans) are seen to depict successful small business owners.

A third dimension is added to the research scenario in the form of "rejected loan applications". These are loan applications received by the venture capitalist during the calendar year of 1987 but which were for a number of reasons not granted by the venture capitalist.

D'Amboise and Muldowney (1988, p.231) state that: "An initial problem in dealing with the literature on success and failure is defining terms." This

statement is better understood when the views of a few authors on the issue of success-failure of new ventures are considered.

Brockhaus (1980b), Cuba, Decenzo and Anish (1983), Litvak and Maule (1973) and Woo et al. (1991) consider a new venture, successful when it manages to survive a certain time-span, therefore their criterion consists of the survival ability of a new venture.

An area of concern directly related to the issue of success-failure are the evaluation criteria for the new venture's performance (Ahwireng-Obeng, 1986; d'Amboise & Muldowney, 1988). Roure and Madique (1986) used a criterion consisting of (1) sales level, (2) after-tax profits, and (3) lifespan of a new venture since its initial funding, to distinguish between successful and unsuccessful high-technology ventures in their study. Growth in the logarithm of gross earnings was the criterion of success used for a study conducted by Kalleberg and Leicht (1991) on gender and organizational performance.

Unfortunately, financial ratios and information was either unobtainable or unreliable for the small business owners ventures included in this study. These would have created a more reliable and valid grouping of successful and unsuccessful small business owners (Kalleberg & Leicht, 1991). Therefore, the type of criterion decided upon for this study is very crude with great limitations and is far from ideal.

The criterion thus implemented is considered to be one of the main shortcomings of this study.

The resultant sample extracted from the files of the venture capitalist consists of 569 small business

owners active within 435 business enterprises. Of the 569 small business owners 433 were male and 136 female. More than two-thirds, i.e. 392, indicated a preference to communicate in Afrikaans, while the other 177 preferred English. The majority of the small business owners, i.e. 489, were South African citizens. The average age of members of the sample was 39.5 years with a standard deviation of 9.9 years and a range of 20 - 69 years. The sample can also be divided into 463 white and 106 black small business owners. Table 5 is a more elaborate and descriptive table of the number of clients per account status, year group and the dichotomous criterion of successful and unsuccessful small business owners and rejections for all the variables included in the study.

dichotomous

TABLE 7. ACCOENT STATUS AND RATE OF SUCCESS IN TWO YEAR GROUPS (N=210 1985 - 1986 AND N=329 1986 - 1987) AND IN TOTAL GROUP (N=569) AND REJECTIONS (N=107) OF ALL PREDICTOR VARIABLES

	ACCOENT STATUS												SUCCESS RATE						REJECTIONS
	1985-1986				1986-1987				Total				1985-1986		1986-1987		Total		1987
	BD N	LC N	CA N	PL N	BD N	LC N	CA N	PL N	BD N	LC N	CA N	PL N	Suc N	Unsuc N	Suc N	Unsuc N	Suc N	Unsuc N	
Sample-N	73	17	108	42	89	27	163	50	162	44	271	92	150	90	213	116	363	206	107
Race																			
White	53	10	91	32	69	22	106	50	122	32	227	82	123	63	186	91	309	154	97
Asian	1	2	3	-	1	-	3	-	2	2	6	-	3	3	3	1	6	4	1
Coloured	-	1	2	-	1	-	2	-	1	1	4	-	2	1	2	1	1	2	-
Black	19	4	12	10	18	5	22	-	37	9	34	10	22	23	22	23	44	46	9
Language preference																			
Afrikaans	50	8	61	30	67	15	115	46	117	23	176	76	91	58	161	82	252	110	73
English	23	9	17	12	22	12	48	4	45	21	95	16	59	32	52	31	111	66	31
Residential area																			
PWV-area*	29	7	19	21	26	7	39	14	55	14	58	35	40	36	53	33	93	69	70
Town	29	8	64	15	48	18	91	27	77	26	155	42	79	37	118	66	197	103	24
Rural	15	2	22	6	15	2	29	9	30	4	51	15	28	17	38	17	66	34	11
Unknown	-	-	3	-	-	-	4	-	-	-	7	-	3	-	4	-	7	-	2
Education																			
School not completed	20	5	12	4	23	4	38	7	43	9	50	11	16	25	45	27	61	52	21
School completed	25	8	38	18	38	11	74	21	63	19	97	39	56	33	80	49	136	82	41
Tertiary	28	3	54	15	21	11	42	20	49	14	111	35	69	31	77	32	116	63	35
Unknown	-	1	4	5	7	1	9	2	7	2	13	7	9	1	11	8	20	9	7
Number of dependents																			
0	7	3	7	8	10	2	12	8	17	5	19	16	15	10	20	12	35	22	12
1	5	1	19	3	14	8	30	14	19	9	49	17	22	6	44	22	66	28	20
2	8	5	10	7	11	3	23	7	19	8	33	14	17	13	30	14	47	27	17
3	20	2	21	8	23	7	35	9	43	9	56	17	29	22	44	30	73	52	31
4	16	1	21	6	16	4	34	4	32	5	55	10	27	17	38	20	65	37	12
5	11	2	11	-	2	1	7	4	13	3	18	4	11	13	11	3	22	16	8
6>	1	-	2	1	3	1	5	-	4	1	7	1	3	1	5	4	8	5	1
Unknown	5	3	17	9	10	1	17	4	15	4	34	13	26	8	21	11	47	19	6
Sex																			
Male	55	15	86	31	71	23	117	35	126	38	203	66	117	70	152	94	269	164	87
Female	18	2	22	11	18	4	46	15	36	6	68	26	33	20	61	22	94	42	20
Nationality																			
South African	64	15	90	35	80	25	134	46	144	40	224	81	125	79	180	105	305	181	93
Not South African	3	-	15	3	2	1	16	1	5	1	31	4	18	3	17	3	35	6	10
Unknown	6	2	3	4	7	1	13	3	13	3	16	7	7	8	16	8	23	16	4
Resident/Non-resident status																			
Resident	65	14	92	36	70	25	134	45	135	39	226	81	128	79	179	95	307	171	86
Non-resident	1	-	2	1	3	-	1	-	4	-	3	1	3	1	1	3	1	1	2
Unknown	7	3	11	5	16	2	28	5	23	5	42	10	19	10	33	18	52	28	19
Age																			
< 20	-	-	-	-	1	-	-	1	1	-	-	1	-	-	1	1	1	1	3
21 - 25	3	3	2	4	8	1	9	3	11	4	11	7	6	6	12	9	18	15	11
26 - 30	10	1	9	7	7	3	20	10	17	4	29	17	16	11	30	10	16	21	8
31 - 35	16	1	23	6	17	4	24	6	33	5	47	12	29	17	30	21	59	38	17
36 - 40	16	1	37	10	20	11	42	9	36	12	79	19	47	17	51	31	98	18	16
41 - 45	15	2	11	4	13	-	20	10	28	2	31	14	18	17	30	13	48	30	20
46 - 50	11	3	6	4	13	4	23	6	24	7	29	10	10	11	29	17	39	31	14
51 - 55	1	3	10	1	4	2	9	1	5	5	19	2	11	4	10	6	21	10	8
56 - 60	-	1	5	5	4	1	9	2	4	2	11	7	10	1	11	5	21	6	4
61 - 65	1	2	1	1	1	1	3	1	2	3	4	2	2	3	1	2	6	5	3
> 66	-	-	1	-	1	-	2	1	1	-	3	1	-	3	1	1	1	1	2
Unknown	-	-	-	-	-	-	2	-	-	-	2	-	-	-	2	-	2	-	1
Employment history																			
Same as new venture	33	3	52	16	29	8	70	19	62	11	122	35	68	36	89	37	157	73	11
Differs to new vent	20	8	35	13	48	16	72	27	68	24	107	10	18	28	99	64	147	92	39
Vent already exists	20	1	18	13	9	3	15	3	29	7	33	16	31	21	18	12	12	36	10
Unknown	-	2	3	-	3	-	6	1	3	2	9	1	3	2	7	3	10	5	11

* Pretoria-Juyswatersrand-Vereeniging Area

Table 5 (continue)

	ACCOUNT STATUS												SUCCESS RATE				REJECTIONS		
	1985-1986				1986-1987				Total				1985-1986		1986-1987		Total	1987	
	BD	LC	CA	PL	BD	LC	CA	PL	BD	LC	CA	PL	Suc	Unsuc	Suc	Unsuc	Suc	Unsuc	
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
Biographical predictors																			
<u>Apprenticeship/clerkship</u>																			
Completed	17	5	31	8	18	9	25	8	35	14	56	16	39	22	33	27	72	49	25
Not completed	2	1	3	2	3	-	6	-	5	1	9	2	5	3	6	3	11	6	1
None of the above	54	9	70	27	62	17	125	42	116	26	195	69	97	63	167	79	264	112	68
Unknown	-	2	4	5	6	1	7	-	6	3	11	5	9	2	7	7	16	9	10
<u>Marital status</u>																			
Single	5	3	6	6	9	2	10	6	14	5	16	12	12	8	16	11	28	19	11
Married	60	11	93	31	69	25	111	38	129	36	234	69	124	71	179	91	303	165	85
Divorced	5	1	6	1	7	-	5	4	12	1	11	5	7	6	9	7	16	13	7
Widow/er	3	1	1	1	3	-	2	2	6	1	3	3	2	4	4	3	6	7	1
Unknown	-	1	2	3	1	-	5	-	1	1	7	3	5	1	5	1	10	2	3
<u>Criminal record</u>																			
No	66	13	93	31	76	24	140	48	142	37	233	82	127	79	188	100	315	179	98
Yes	1	-	3	-	3	-	4	-	4	-	7	-	3	1	4	3	7	4	1
Unknown	6	1	12	8	10	3	19	2	16	7	31	10	20	10	21	13	41	23	8
<u>Sequestration record</u>																			
No	68	14	99	35	80	23	140	48	148	37	239	83	134	82	188	103	322	185	99
Yes	-	-	-	-	2	2	2	-	2	2	2	-	-	-	2	1	2	1	1
Unknown	5	3	9	7	7	2	21	2	12	5	30	9	16	8	23	9	39	17	7
Business predictors																			
<u>Economy sector</u>																			
Manufacturing	22	3	18	9	16	7	47	11	38	10	95	20	57	25	58	23	115	48	33
Retail	19	6	35	12	37	10	58	16	56	16	93	28	47	25	71	17	121	72	23
Wholesale	-	1	1	1	5	-	2	-	5	4	6	1	5	1	2	5	7	9	8
Services	21	2	19	20	24	10	46	14	45	12	65	34	39	23	60	34	99	57	34
Construction	2	2	1	-	3	-	-	-	5	2	1	-	1	1	-	3	1	7	-
Foods	9	-	1	-	4	-	10	9	13	-	11	9	1	9	19	4	20	13	9
<u>Purpose of financing</u>																			
Take-over	1	2	4	2	10	3	15	3	11	5	19	5	6	3	18	13	21	16	11
New business	30	8	19	23	47	10	92	29	77	18	111	52	72	38	121	57	193	95	52
Expand exist bus	38	6	51	16	30	14	53	17	68	20	104	33	67	44	70	44	137	88	29
Creditors repayment	-	-	3	1	1	-	1	-	1	-	4	1	1	-	1	1	5	1	8
Other	1	-	-	-	1	-	2	-	5	-	2	-	-	4	2	1	2	5	1
Unknown	-	1	1	-	-	-	-	1	-	1	1	1	1	1	1	-	2	1	-
<u>Number of loans</u>																			
1	18	17	71	35	70	21	103	42	118	38	177	77	109	65	115	91	254	156	
2	22	-	26	3	15	3	48	4	37	3	74	7	29	22	52	18	81	10	
3	2	-	6	3	4	-	9	-	6	-	15	3	9	2	9	4	18	6	
4	1	-	2	-	-	-	1	-	1	-	3	-	2	1	1	-	3	1	
Unknown	-	-	-	1	-	3	2	4	-	3	2	5	1	-	6	3	7	3	
<u>Total amount borrowed</u>																			
R 0-8 9 999	8	-	7	8	18	3	23	9	26	3	30	17	15	8	32	21	47	29	7
R10 000-R19 999	15	2	12	1	21	5	30	6	36	7	42	10	16	17	36	26	52	43	10
R20 000-R29 999	16	5	20	15	13	11	27	9	29	16	48	21	36	21	36	24	72	45	6
R30 000-R39 999	11	-	11	6	18	3	33	13	29	3	44	19	17	11	16	21	64	32	6
R40 000-R49 999	1	1	3	-	1	-	3	-	5	1	6	-	3	5	3	1	6	6	1
R50 000-R59 999	1	-	3	3	6	-	8	5	7	-	11	8	6	1	13	6	19	7	14
R60 000-R69 999	5	1	8	-	1	-	4	1	6	1	12	1	8	6	5	1	13	7	7
R70 000-R79 999	1	-	11	1	1	1	2	-	2	1	13	1	12	1	2	2	11	3	10
R80 000-R89 999	-	-	-	-	-	-	9	1	-	-	9	1	-	-	13	-	13	-	3
R90 000-R99 999	-	-	1	-	-	1	1	-	-	1	2	-	1	-	1	1	2	1	6
> R100 000	13	8	31	5	9	3	23	2	22	11	54	7	36	20	35	13	61	33	37

Table 5 (continued)

Business predictors	ACCOUNT STATUS												SUCCESS RATE				REJECTIONS			
	1985-1986				1986-1987				Total				1985-1986		1986-1987		Total		1987	
	BD	LC	CA	PL	BD	LC	CA	PL	BD	LC	CA	PL	Suc	Unsuc	Suc	Unsuc	Suc	Unsuc		
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
Percentage of own contribution to new venture																				
< 0%	-	-	2	-	2	-	2	-	2	-	4	-	2	-	2	2	4	2		28
0% - 10%	6	1	11	3	10	4	26	7	16	8	37	10	11	10	33	14	17	21		22
10% - 20%	11	6	20	8	14	4	13	15	25	10	63	23	28	17	58	18	86	35		21
20% - 30%	17	2	31	13	22	3	31	4	39	5	62	17	14	19	35	25	79	14		8
30% - 40%	15	1	18	6	12	10	21	7	27	11	39	13	21	16	28	22	52	38		13
40% - 50%	9	3	10	1	12	4	22	7	21	7	32	8	11	12	29	16	40	28		6
50% - 60%	6	-	8	1	6	1	10	6	12	1	18	7	9	6	16	7	25	13		2
60% - 70%	7	1	5	2	5	-	6	2	12	1	11	4	7	8	8	5	15	13		3
70% - 80%	1	-	-	2	6	1	2	2	7	1	2	4	2	1	4	7	6	8		-
> 80%	1	-	-	5	-	-	-	-	1	-	-	5	5	1	-	-	5	1		-
Unknown																				4
Security cover																				
0 - 0,21	12	2	7	1	20	3	22	5	32	5	29	9	11	11	27	23	38	37		20
0,25 - 0,19	3	-	8	-	8	1	11	1	11	1	19	1	8	3	12	9	20	12		32
0,5 - 0,71	21	1	18	4	5	5	22	7	26	6	40	11	22	22	29	10	51	32		25
0,75 - 0,99	11	2	8	1	15	6	20	8	29	8	28	12	12	16	28	21	40	37		12
1 - 1,21	12	4	30	19	24	2	35	10	36	6	65	29	49	16	15	26	94	12		9
1,25 - 1,49	2	5	8	1	3	2	16	6	5	7	24	7	9	7	22	5	31	12		-
1,5 - 1,71	-	-	10	1	2	3	10	4	2	3	20	5	11	-	14	5	25	5		1
1,75 - 1,99	1	2	1	2	1	1	4	1	2	3	5	3	3	3	5	2	8	5		-
2,0 - 2,24	-	1	-	-	3	1	5	3	3	2	5	3	-	1	8	1	8	5		-
2,25 <	7	-	13	6	7	3	6	4	14	3	19	10	19	7	10	10	29	17		2
Unknown	1	-	5	1	1	-	12	1	2	-	17	2	6	1	13	1	19	2		6
Interest paid on loans																				
10%	3	-	1	4	5	6	8	4	8	6	12	8	8	3	12	11	20	14		-
11%	-	-	-	2	-	-	-	-	-	-	-	2	2	-	-	-	2	-		-
12%	-	-	-	-	4	-	2	-	4	-	2	-	-	-	2	4	2	4		-
13%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-
14%	12	8	17	2	60	7	88	22	72	15	105	24	19	20	110	67	129	87		9
15%	19	2	15	2	6	4	20	4	25	6	35	6	17	21	21	10	11	31		2
16%	14	1	16	7	12	5	33	18	26	6	49	25	23	15	51	17	74	32		1
17%	1	-	13	-	1	5	11	1	2	5	24	1	13	1	12	6	25	7		1
18%	12	6	30	14	1	-	1	-	13	6	31	14	44	18	1	1	45	19		-
19%	5	-	4	4	-	-	-	-	5	-	4	4	8	5	-	-	8	5		-
>20%	7	-	8	7	-	-	-	-	7	-	8	7	15	7	-	-	15	7		-
Unknown	-	-	1	-	-	-	-	1	-	-	1	1	1	-	1	-	2	-		94
Type of Venture																				
Sole proprietor	36	8	15	18	54	12	82	21	90	20	127	39	63	41	103	66	166	110		39
Partnership	7	-	10	7	11	2	26	13	18	2	36	20	17	7	39	13	56	20		13
Closed corporation	16	3	21	9	20	12	41	13	36	15	65	22	33	19	51	32	87	51		37
Company	13	5	28	8	4	1	11	2	17	6	39	10	36	18	13	5	19	23		17
Unknown	1	1	1	-	-	-	3	1	1	1	4	1	1	2	4	-	5	2		1
Development state of Venture																				
Existing	11	7	58	16	35	14	61	19	76	21	119	35	74	18	80	19	154	97		11
New	31	9	19	21	47	10	90	30	78	19	139	54	73	10	120	57	193	97		52
Take-over	1	1	1	2	7	3	12	1	8	4	13	3	3	2	13	10	16	12		11
Employment existing																				
0	28	9	18	19	49	10	90	31	77	19	138	50	67	37	121	59	188	96		2
1 - 3	12	-	13	6	13	4	25	10	25	4	38	16	19	12	45	17	54	29		8
4 - 6	12	1	10	8	7	5	15	2	19	6	25	10	18	13	17	12	35	25		2
7 - 9	1	1	8	2	1	1	9	4	8	2	17	6	10	5	13	5	23	10		2
10 - 12	3	2	1	-	7	1	1	1	10	3	8	1	1	5	5	8	9	13		-
13 - 15	1	-	1	-	-	-	5	1	1	-	9	1	4	1	6	-	10	1		3
16 - 18	-	-	1	-	1	-	2	-	1	-	3	-	1	-	2	1	3	1		1
19 - 21	3	3	3	2	-	-	2	-	3	3	5	2	5	6	2	-	7	6		-
> 22	7	-	11	5	3	-	1	1	10	-	18	6	19	7	5	3	21	10		5
Unknown	3	1	3	-	5	6	7	-	8	7	10	-	3	1	7	11	10	15		84

Table 3 (continued)

Business predictors	ACCOUNT STATUS												SUCCESS RATE						REFLECTIONS
	1985-1986				1986-1987				Total				1985-1986		1986-1987		Total		1987
	BD N	LC N	CA N	PL N	BD N	LC N	CA N	PL N	BD N	LC N	CA N	PL N	Suc N	Unsuc N	Suc N	Unsuc N	Suc N	Unsuc N	
<u>Employment additional</u>																			
0	11	-	6	3	7	4	14	3	18	4	20	6	9	11	17	11	26	22	1
1 - 3	21	5	30	15	35	7	57	19	56	12	87	34	45	26	76	12	121	68	8
4 - 6	13	1	21	9	14	11	35	15	27	12	56	24	30	14	50	25	40	39	13
7 - 9	5	-	7	6	9	2	11	5	14	2	18	11	13	5	16	11	29	16	2
10 - 12	4	1	18	1	8	-	7	3	12	4	25	4	19	8	10	8	29	16	2
13 - 15	4	-	-	-	2	-	7	1	6	-	7	1	-	4	8	2	8	6	1
16 - 18	-	4	1	-	-	3	12	-	-	7	13	-	1	4	12	3	13	7	1
19 - 21	2	-	1	-	4	-	6	-	6	-	10	-	4	2	6	4	10	6	1
> 22	11	1	12	5	9	-	3	4	20	1	15	9	17	12	7	9	24	21	1
Unknown	2	2	9	3	1	-	11	-	3	2	20	3	12	4	11	1	23	5	77
<u>Risk classification</u>																			
Low	8	3	22	5	11	2	14	8	19	5	36	13	27	11	22	13	49	24	-
Medium	51	12	75	36	67	25	139	40	121	37	214	76	111	66	179	92	290	158	11
High	11	2	9	1	11	-	10	-	22	2	19	1	10	13	10	11	20	24	2
Very high	-	-	-	-	-	-	-	1	-	-	-	1	-	-	1	-	1	-	-
Unknown	-	-	2	-	-	-	-	1	-	-	2	1	2	-	1	-	3	-	94
<u>Status of entrepreneur in venture</u>																			
Sole proprietor	38	8	46	17	54	12	84	20	92	20	130	37	63	46	101	66	167	112	39
Partner	7	-	10	9	11	2	26	16	18	2	36	25	19	7	42	13	61	20	12
Member	15	3	21	9	20	12	41	12	35	15	65	21	33	18	53	32	86	50	38
Shareholder	13	5	28	7	4	1	10	2	17	6	38	9	35	18	12	5	47	23	17
Unknown	-	1	-	-	-	-	2	-	-	1	2	-	-	1	2	-	2	1	1
<u>Entrepreneurs' % royalty</u>																			
0% - 9%	1	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	1	1
10% - 19%	-	1	5	-	4	1	1	1	4	2	6	1	5	1	2	5	7	6	5
20% - 29%	1	5	11	1	5	1	9	2	6	6	20	3	12	6	11	6	23	12	6
30% - 39%	6	-	-	8	3	1	3	-	9	1	3	8	8	6	3	4	11	10	1
40% - 49%	1	-	5	-	4	3	3	1	5	3	8	1	5	1	4	7	9	8	5
50% - 59%	15	1	30	11	8	5	45	18	23	6	75	29	41	16	63	13	104	29	30
60% - 69%	2	-	3	-	-	1	1	-	2	1	4	-	3	2	1	1	4	3	3
70% - 79%	-	-	2	1	1	-	-	-	1	-	2	1	3	-	-	1	3	1	2
80% - 89%	-	-	2	-	-	-	2	-	-	-	4	-	2	-	3	-	5	-	1
> 90%	47	9	50	21	64	15	97	28	111	24	147	49	71	56	121	79	195	135	54
Unknown	-	1	-	-	-	-	2	-	-	1	2	-	-	1	2	-	2	1	1

4.2 STATISTICAL ANALYSIS

The aim of the present study was to determine whether the success level of small business owners could be predicted by means of biographical and business predictor variables. Moore (1990) argues that researchers of entrepreneurship need to employ statistical techniques that are more sophisticated than the frequency and t-tests commonly employed, because this would yield more meaningful analyses. According to Moore (ibid) this would contribute to the establishment of a sound research base from which theory could evolve. Therefore the statistical analysis used in the study include non-parametric techniques as well as powerful and sophisticated parametric techniques.

The statistical analysis strategy utilised, was one of elimination of predictor variables from the final prediction model. Thus, it was a procedure that strived to include only predictor variables in the final prediction model that managed to "survive" all the previous elimination procedures. Therefore the statistical procedure can be described in terms of stages.

Firstly an attempt was made to identify predictor variables that distinguished significantly between the subjects in terms of their "scores" on the criterion variable. This was accomplished by the use of the statistical procedures of Chi-square and One-way Analysis of Variance with Bonferroni ranges test specified.

Secondly, the identification of predictor variables that distinguish significantly between the subjects, based on the dependent variables by means of a multivariate procedure in the form of stepwise discriminant analysis, based on minimising the overall Wilks' Lambda (Begley &

Boyd, 1987; Brockhaus, 1980b; Brockhaus & Nord, 1979; Fraboni & Saltstone, 1990; King, 1986; Lachman, 1980; Lumpkin & Ireland, 1988). The predictor variables entered into the stepwise discriminant model, were only those that "survived" the elimination process of the first stage.

Finally, a prediction model was constructed of the criterion variable by means of discriminant analysis using only those predictor variables that survived the initial part of the analysis procedure.

The core of the statistical analysis employed consists of multivariate statistics. Recently, Kaish and Gilad (1991) and Ohe et al. (1990) used multivariate discriminant analysis successfully to differentiate entrepreneurs from executives in their studies. MacMillan, Zemann and Subbanarasimha (1987) also used multivariate discriminant analysis to differentiate successful entrepreneurs from unsuccessful entrepreneurs, and Begley and Boyd (1987) used this multivariate statistical technique to differentiate founders from non-founders of new ventures in their study.

The rest of this chapter focuses on the analytical techniques and procedures implemented and will be discussed on a non-mathematical basis.

4.2.1 Chi-Square

The chi-square test is perhaps the best known test of significance for independence for tables containing nominal and ordinal variables (Bailey, 1982) as is the case in this study. Its purpose is to protect the researcher from making misleading inferences from sample data. The chi-square test is a non-parametric test, that is, no assumptions are made about the

characteristics of population parameters or the distribution of the population (McKay, Schofield & Whiteley, 1983). The conclusion is that the chi-square test examines the discrepancies between observed frequencies and a set of expected frequencies constructed by assuming that no relationship exists between the variables (Bateman & Ferris, 1984).

The chi-square test statistic is defined as:

$$\text{Chi-square} = \frac{(O - E)^2}{E}$$

where O and E denote the observed and expected. Chi-square provides an alternative procedure for testing the significance of the difference between proportions of independent samples (Ferguson, 1987).

One major drawback of the chi-square test and other similar tests is that it is sensitive to the sample size (Dooley, 1990). If the sample size is large enough, a significant relationship can be established between almost any variables (McKay et al, 1983). Admittedly, the sample size utilised in this study was relatively large for a social research project, therefore the researcher increased the level at which differences would be observed as significant ($p = 0,01$).

The chi-square test was thus implemented in the initial stage of the statistical analysis in this study in an attempt to identify nominal predictor variables that were significantly associated with criterion variables.

4.2.2 Analysis of Variance

The difference among groups in terms of their "scores" on the criterion variables was tested for significance using One-way Analysis of Variance and significant differences were further isolated using the Bonferroni ranges test. The ranges, or means test, shows where significant differences lie between the means of groups in terms of their "scores" on the criteria variables.

Therefore, in its simplest form the Analysis of Variance is used to test the significance of the differences between the means of a number of different cells (Ferguson, 1987).

Analysis of variance is also more general in scope than regression analysis, since it can be used for identifying relationships between criterion variable and predictor variables whether those predictor variables are quantitative or qualitative in nature (Kachigan, 1982). However, Keppel and Zedeck (1989) argues that Analysis of Variance and Regression Analysis are algebraically equivalent - but which should be applied to analyse data is dependent on how the data have been collected or which research paradigm has been used in the study. Therefore analysis of variance has been implemented in this study for the above reason and also since it can be applied to ordinal and nominal predictor variables (Ferguson, 1987).

4.2.3 Multivariate statistics

As multivariate statistics form the core of the analysis performed, these will be briefly discussed.

The term multivariate statistics conventionally refers to a broad class of correlational statistical methods used in the analysis of data comprising more than two variables per case, sometimes many (Emory, 1985; Ferguson, 1987; Kerlinger, 1986). In psychology, education, and possibly all the social and biological sciences, the phenomena being studied are often very complex (Ferguson, 1987). Therefore, they can be described, predicted, and understood only, if at all, by the study of many variables.

One major purpose of multivariate statistics is simplification. A study may involve a hundred variables and thousands of measurements. Such data require methods of analysis that describe the data in forms sufficiently simple that the information they contain can be grasped by the researcher (Ferguson, 1987).

Different, multivariate analyses can be done with data of any measurement level, for example, nominal or ordinal variables can be studied. The most commonly used multivariate approach in social research is regression analysis (Dooley, 1990), and discriminate analysis (Emory, 1985). It can be argued that, of all of the methods of analysis, multivariate methods are the most powerful and appropriate for scientific behavioural research (Kerlinger, 1986).

If criterion and predictor variables are used, the appropriate technique will depend upon the number of each variable type (Emory, 1985).

4.2.3.1 Discriminant Analysis

Very often the criterion variable of interest is dichotomous in nature, (Emory, 1985) (as is the case

in this study) and in this instance there is an interest in predictor variables which are related to the two criterion values (Kachigan, 1982). In a situation of this kind, discriminant analysis performs in a similar way to multiple regression on a dichotomous dependent variable (Begley & Boyd, 1987). An appropriate statistical technique is required to establish whether values on the various predictor variables are related to the alternative values on the dichotomous criterion variable (Begley & Boyd, 1987).

Discriminant analysis is a procedure for identifying such relationships between criterion variables and predictor variables (Emory, 1985; Kachigan, 1982; Kerlinger, 1986). According to Begley and Boyd (1987) discriminant analysis can pinpoint the combination of predictor variables that best differentiate successful from unsuccessful small business owners. Discriminant analysis is a procedure for identifying boundaries between groups of objects, the boundaries being defined in terms of those variable characteristics which distinguish or discriminate the objects in the respective criterion groups (Kachigan, 1982).

First of all, the variables which are related to the criterion variable can be established, and secondly it will be possible to predict values on the criterion variable when given values on the predictor variables. Thus, a lending institution would be able to distinguish credit risks from non-risks; personnel departments would be able to discriminate between successful and unsuccessful job trainees, etc. (Emory, 1985; Kachigan, 1987).

Discriminant analysis is essentially an adaptation of the regression analysis technique. The regression equation uses a weighted combination of values on various predictor variables to predict an object's value on a continuously scaled criterion variable, while the discriminant function uses a weighted combination of those predictor variable values to classify an object into one of the criterion variable groups. In symbolic form, the discriminant function can be expressed as follow:

$$L = b_1 x_1 + b_2 x_2 + \dots + b_k x_k$$

(Kachigan, 1982)

where x_1 ; x_2 , x_k represent values on the various predictor variables and b_1 , b_2 ,, b_k the weights associated with each of the respective predictor variables, and L is an object's resultant discriminate score.

The predictor variables included in this study are measured on nominal, ordinal and interval measurement scales. Technically the computation of multivariate statistics necessitate the use of predictor variables measured on interval scales (Leedy, 1985). However, Kerlinger (1986) argues that although nominal and ordinal scales are mostly used in behavioural research the probability is good that many scales and tests used in psychological measurement approximate interval measurements well enough for practical purposes and that the consequences of regarding such measurements to be of interval strength are not serious.

This study was done on existing data and limited to "what was available" which dictated to a great extent the nature of the measurement scales used in

this study to be at the nominal, ordinal or interval measurement level. For the purpose of this study the predictor variables measured at the nominal level were considered to possess ordinal scale characteristics, for example: (1) Language preference - English speaking small business owners were considered to represent individuals with more business background than Afrikaans speaking small business owners, (2) Nationality - Non-South African small business owners were considered to be at a higher level of business acumen than South African small business owners.

Previous researchers on the phenomenon of entrepreneurship (Brockhaus, 1980b; King, 1986) similarly used nominal scaled variables in the computation of their respective discriminating models of entrepreneurs. We can conclude with Kerlinger (1986, pp.402-403) who states that if researchers in the behavioural sciences were to "abide strictly by the statistical rules, we cut off powerful modes of measurement and analyses and are left with tools inadequate to cope with the problems we want to solve ... and they are therefore so used without a qualm by most researchers".

Discriminant analysis lends itself to the selection of predictor variables through stepwise procedures. During the stepwise procedure, predictor variables are introduced into the discriminant model in such a way that the best single discriminating predictor variable is identified first, followed by the predictor variable that best explains the remaining variance and so on (Begley and Boyd, 1987).

If the groups do not differ on the individual predictor variables as indicated by the Chi-square

and One-way of Analysis procedures, it is unlikely that they will differ on the discriminant function. Therefore a statistical analysis strategy of elimination of non-significant predictor variables was implemented. On the other hand, chance differences between groups on the individual predictor variables could accumulate to produce apparent discrimination between the groups.

To establish whether the discriminant function in fact succeeds in discriminating between members of the criterion groups, there are a number of indicators of the amount of discrimination achieved in a discriminant function analysis. Among the available indices are R^2 (Kerlinger, 1986) the square of the multiple correlation coefficient and Wilks' Lambda (Begley & Boyd, 1987; Kachigan, 1982). The standardised discriminant function coefficients represent the relative contribution of each of the predictor variables to the prediction equation (Brockhaus & Nord, 1979; Fraboni & Saltstone, 1990).

Thus, discriminant analysis is similar in principle to regression analysis and it classifies objects into groups based on their values on various predictor variables. The main distinction between discriminant analysis and regression analysis is that regression analysis should be applied to a prediction of a continuous criterion variable and discriminant analysis to the prediction of a dichotomous/multiple scaled criterion variable (Ferguson, 1987).

Seeing that the criterion variable for the purpose of this study consists of

- * level of success - 2 levels and
- * account status - 4 levels

the application of discriminant analysis is the most appropriate in building a prediction model for making the distinction between successful and unsuccessful small business owners in this study.

CHAPTER 5

RESULTS

This chapter describes the results obtained by implementing the statistical analytical techniques proposed in chapter four.

Since an "elimination" analytical procedure was proposed in the previous chapter which eventually culminates in a prediction model of the success level of small business owners, the resulting findings will be discussed accordingly.

Thus, the aim of the data analysis was to build predictive models (in terms of the two criteria employed in the study i.e. (1) Account status and (2) Success or failure) by means of the available biographical and business variables. This process was carried out in three phases.

The first phase consisted of One-way Analysis of Variance and Chi-square calculations on the scores of the different groups on all the independent variables included in the study.

The second phase of the data analysis consisted of using the STEPDISC procedure of SAS (1985) to determine, by means of Stepwise Discriminant Analysis, which of the variables identified as potential predictors in the first phase of the analysis could be retained as predictors in the two models (as mentioned above) of prediction of the success/failure of the businesses of small business owners.

The third and final phase consisted of using the DISCRIM procedure of SAS (1985) to predict by means of Discriminant analysis, the class (group) into which small business owners would be classified using their "scores" on the predictor variables identified by means of the previously described analyses.

5.1 CHI-SQUARE AND ONE-WAY ANALYSIS OF VARIANCE

As stated the first phase consisted of eliminating variables that did not possess any significant predictive ability on the level of success ((1) Account status (2) Success or failure) of small business owners. To accomplish this, One-way Analysis of Variance with Bonferroni's Ranges tests and Chi-square (in the case of nominal scaled variables) were carried out on all the biographical- and business predictor variables included in the study (see Table 5) with account status (specified as (1) bad debts (2) legal control (3) current account (4) paid-up loans) as criterion variable. These analyses were repeated with success level (specified as (1) successful and (2) unsuccessful small business owners) as the criterion variable. Finally, both analyses (as mentioned above) were repeated with the difference that the group of rejections were included in an attempt to find an answer to the second research question stated: "Do significant differences on biographical and business variables exist between the groups whose loan applications were granted and the individuals whose loan applications were rejected by the venture capitalist?"

As already mentioned, One-way Analysis of Variance with Bonferroni's Ranges test specified was done on all the predictor variables measured on ordinal scales with firstly account status as a criterion variable and secondly success level as the criterion variable. Chi-square analysis was performed in the case of all the predictor variables measured on nominal scales. These results are shown in Tables 6 and 7.

TABLE 6 RESULTS OF VARIABLES ON WHICH SIGNIFICANT DIFFERENCES EXISTED FOR ONE-WAY ANALYSES OF VARIANCE AND CHI-SQUARE ANALYSES (ACCOUNT STATUS)

DEPENDENT VARIABLE : ACCOUNT STATUS									
Predictor Variables	1985-1986			1986-1987			TOTAL		
Nominal Variables	Chi ²	df	P	Chi ²	df	P	Chi ²	df	P
Race	19.80	9	0.019	-	-	-	17.39	9	0.043
Language preference	-	-	-	14.22	3	0.003	16.56	3	0.001
Sector in economy	66.82	15	0.001	31.60	15	0.007	37.25	15	0.001
Residential area	19.52	6	0.003	-	-	-	14.75	6	0.022
Nationality	-	-	-	8.22	3	0.042	13.69	3	0.003
Ordinal Variables (df=3)	F	P		F	P		F	P	
Number of loans	2.84	0.0385		6.24	0.0004		7.65	0.0001	
Amount of loan	6.77	0.0002		-	-		4.03	0.0075	
Security cover	-	-		3.41	0.018		3.39	0.0179	
Own contribution	3.62	0.0139		-	-		4.13	0.0066	
Education	-	-		3.81	0.0104		3.78	0.0106	
Number of dependents	2.91	0.0357		-	-		4.31	0.0051	

TABLE 7 RESULTS OF VARIABLES ON WHICH SIGNIFICANT DIFFERENCES EXISTED FOR ONE-WAY ANALYSES OF VARIANCE AND CHI-SQUARE ANALYSES (SUCCESS LEVEL)

DEPENDENT VARIABLE : SUCCESS LEVEL									
Predictor variables	1985-1986			1986-1987			TOTAL		
Nominal Variables	Chi ²	df	P	Chi ²	df	P	Chi ²	df	P
Race	-	-	-	-	-	-	10.48	3	0.015
Sector in economy	17.76	5	0.003	15.12	5	0.010	15.37	5	0.009
Nationality	4.91	1	0.027	3.90	1	0.048	8.69	1	0.003
Ordinal Variables (df=1)	F	P		F	P		F	P	
Education	4.95	0.0271		-	-		-	-	
Interest rate	-	-		5.13	0.0242		4.30	0.0386	
Risk classification	4.21	0.0414		-	-		-	-	

The One-way Analysis of Variance and Chi-square analyses depicted in Table 8 and Table 9 are those which include rejections as an outcome-group. These analyses were performed to establish if any significant differences on the predictor variables existed between the individuals whose loan applications were rejected by the venture capitalist (rejections) as an outcome-group and the group whose loan applications were granted by the venture capitalist on firstly the criterion variable account status and secondly the criterion variable level of success of small business owners. These results are shown in Table 8 and Table 9.

TABLE 8 RESULTS OF VARIABLES ON WHICH SIGNIFICANT DIFFERENCES EXISTED FOR ONE-WAY ANALYSIS OF VARIANCE AND CHI-SQUARE ANALYSIS (ACCOUNT STATUS) WITH REJECTIONS AS A GROUP INCLUDED

DEPENDENT VARIABLE : ACCOUNT STATUS			
Predictor Variables	1985 - 1987		
Nominal Variables	Chi ²	df	P
Language preference	16.55	4	0.002
Sector in economy	49.94	20	0.001
Business form	21.52	12	0.043
Status of owner	32.20	12	0.001
Nationality	13.65	4	0.009
Residential area	70.05	8	0.001
Ordinal Variables	F	df	P
Number of loans	7.65	4	0.0001
Amount loaned	10.68	4	0.0001
Security cover	7.98	4	0.0001
Own contribution	17.30	4	0.0001
Number of dependents	3.64	4	0.0061
Education	2.82	4	0.0243

TABLE 9 RESULTS OF VARIABLES ON WHICH SIGNIFICANT DIFFERENCES EXISTED FOR ONE-WAY ANALYSIS OF VARIANCE AND CHI-SQUARE ANALYSIS (LEVEL OF SUCCESS) WITH REJECTIONS AS A GROUP INCLUDED

Predictor Variables	DEPENDENT VARIABLE : LEVEL OF SUCCESS		
	1985 - 1987		
Nominal Variables	Chi ²	df	P
Race	16.96	6	0.009
Business form	12.81	6	0.046
Status of owner	16.37	6	0.012
Residential area	59.37	4	0.001
Nationality	8.83	2	0.012
Ordinal Variables	F	df	P
Number of employees	3.77	2	0.0236
Security cover	10.16	2	0.0001
Own contribution	30.07	2	0.0001
Amount	15.56	2	0.0001

In Table 8 and Table 9 only the predictor variables that discriminated significantly between the group whose applications were not accepted (rejections) compared to the other groups ((1) bad debts, (2) legal control, (3) current account (4) paid-up loans) whose applications were granted by the venture capitalist on the criterion variables ((1) Account status, (2) Level of success) are depicted.

The results obtained in Table 8 and Table 9 versus Tables 6 and 7 can possibly be seen as indicators of the present selection criteria implicitly employed by the venture capitalist. It seems that the venture capitalist takes a special interest in the predictor variables of (1) number of loans of the applicant that exist with the venture capitalist, (2) financial amount applied for, (3) security cover, (4) own financial contribution and (5) business form (i.e. sole proprietor, partnership, closed corporation or company) in the evaluation of a loan application received by them. Significant difference were obtained on the

abovementioned predictor variables between the group whose applications were not accepted (rejections) and the other groups ((1) bad debts, (2) legal control, (3) current account, (4) paid-up loans) whose loan applications were granted by the venture capitalist in terms of the criteria variables (Account status; level of success).

In evaluating these results (Table 8 and Table 9) from an intuitive point of view, the differences seem to be as would be expected. The differences obtained are expected in the light of the normal criteria employed by venture capitalists in the selection of possible entrepreneurs. However, the difference obtained on the other predictor variables ((1) language preference, (2) sector in economy, (3) nationality, (4) residential area, (5) race and (6) status of a owner) cannot be accounted for as easily. The underlying causes on these differences will need further examination in future studies.

The results obtained seem to provide an answer to the second research question stated: "Do significant differences on biographical and business variables exist between the groups whose loan applications were granted and the individuals whose loan applications were rejected by the venture capitalist?"

5.2 STEPWISE DISCRIMINANT ANALYSIS

An attempt was made looking for ways to combine possible predictors by utilising Stepwise Discriminant Analysis. This was accomplished by implementing the STEPDISC procedure of SAS (1985), a procedure that performs a stepwise discriminant analysis by stepwise selection of predictor variables that can be useful for discriminating among several criterion classes (SAS, 1985).

The statistical analysis process implemented in this study was aimed at eliminating chance and capitalisation on chance. Therefore some variables were eliminated by means of Chi-square Analysis and One-way Analysis of Variance. However, the sample sizes of this study are very large for a social research project and this could allow chance to play a role in the predictions (Dooley, 1990; McKay et al, 1983). Schutte, Boshoff and Bennett (1990) also comment that the possibility may exist that chance differences between the defined groups on the individual predictor variables can accumulate which will inflate the levels of discrimination between the groups. Therefore, according to the results of the Analysis of Variance and Chi-square Analysis (Tables 6 & 7) in the first phase of the Analysis, only those predictor variables on which significant differences existed were included in the Stepwise Discriminant Analysis to further eliminate the influence of chance factors. Thus an attempt was made to identify discriminants in a more accurate, valid and reliable manner.

The significance level for the entry and removal of predictor variables during the Stepwise Discriminant Analysis was set at .15, the default value of the programme (SAS, 1985).

Stepwise selection begins with no predictor variables in the model. At each step, if the predictor variable in the model that contributes least to the discriminatory power of the model as measured by Wilks' Lambda (Begley and Boyd, 1987) fails to meet the criterion to stay, then that variable is removed. Subsequently the predictor variable, not in the model and that contributes most to the discriminatory power of the model, is entered. When all predictor variables in the model meet the criterion to

stay, and none of the other variables meet the criterion to enter, the stepwise selection process stops (Kachigan, 1982).

Therefore, this procedure contributes to the elimination of further predictor variables that are not supposed to enter the final prediction model because of the small percentage variance that a variable of this kind explains. The results of these analyses for the total group of subjects for the criterion variable account status are shown in Table 10.

TABLE 10 RESULTS OF STEPWISE DISCRIMINANT ANALYSIS FOR CLASSIFYING SUBJECTS INTO ACCOUNT STATUS GROUPINGS FOR TOTAL GROUP (N=569)

Predictor Variable	Partial R ²	F	P>F	Wilks' Lambda*	Canonical correlation*
Number of loans	.0380	7.43	.0001	.96	.0127
Language preference	.0278	5.38	.0013	.94	.0219
Economic sector	.0274	5.29	.0015	.91	.0308
Own contribution	.0249	4.79	.0028	.89	.0387
Number of dependents	.0212	4.05	.0074	.87	.0455
Nationality	.0191	3.63	.0129	.85	.0520
Security cover	.0180	3.42	.0172	.84	.0574
Educational level	.0149	2.81	.0381	.82	.0621

* p < .0001

In all cases where "unknown" responses were recorded for a predictor, it was substituted by the mean of the specific

predictor. Hereby the total N of a predictor was not influenced as SAS computed the Discriminant analysis (Table 10) using the mean of a specific predictor when dealing with "unknown cases" recorded for the predictor.

The results shown in Table 10 indicate that eight predictor variables were entered into the prediction model at significant levels. Of these four were classified as biographical variables ((1) Language preference, (2) Number of dependents, (3) Nationality, (4) Education level) and four as business variables ((1) Number of loans, (2) Economic sector, (3) Own contribution, (4) Security cover). Of all the predictor variables, the predictor variable "number of loans" had the highest correlation ($R^2 = .038$) with the Discriminant model and therefore entered first into the Discriminant model. At this stage the Discriminant model consists of only one predictor variable (number of loans) with a low Wilks' Lambda of .96, (with a probability, of finding a larger value than $F = 7.43$, being .0001 ($P > F = .0001$)) and a low Canonical correlation of .0127, which indicate that the model is at this stage weak in discriminating small business owners into the four criteria groupings of "Account status". The last predictor variable to be entered by SAS into the the Discriminant model at a significant level ($P > F = .0381$), "educational level" had the lowest correlation ($R^2 = .0149$) with the Discriminant model, in comparison with the predictor variables already entered into the model. Therefore "educational level" as a predictor variable entered last into the Discriminant model. However the Canonical correlation of the Discriminant model increases to .0621 where-as the Wilks' Lambda decreases to .82 when the last predictor variable (educational level) is entered into the Discriminant model. When these values of the Canonical correlation and Wilks' Lambda obtained for the eighth step in the Stepwise Discriminant Analysis is compared to the values obtained for these indices in the first step of the

Stepwise Discriminant Analysis, it can be concluded that the Discriminant model becomes more powerful as the number of predictor variables entered into the model increases. Therefore we can conclude that the results shown in Table 10 indicate that a relatively weak (Wilks' Lambda = .82, Canonical correlation = .0621 and $p < .0001$) but significant model could be developed for predicting the account status of the subjects.

The Stepwise Discriminant Analysis was repeated with the criterion being dichotomous, i.e. Success/Failure in an attempt to establish whether a prediction model could be built for this criterion. Businesses of subjects were regarded as successful when their account status was given as either 'Paid-up' or 'Current'. Failure was seen as all cases where the account status was either 'Under legal control' or 'Insolvent'. The results of the Stepwise Discriminant Analysis for the criterion success/failure on the total group is shown in Table 11.

TABLE 11 RESULTS OF STEPWISE DISCRIMINANT ANALYSIS PREDICTING SUCCESS/FAILURE FOR TOTAL GROUP (N=569)

Predictor Variables	Partial R ²	F	P>F	Wilks' Lambda*	Canonical correlation*
Race	.0164	9.44	.0022	.98	.0164
Nationality	.0149	8.54	.0036	.97	.0310

* $p < .01$

In the case of the dichotomous criterion the prediction model was less strong with only two predictor variables entering the model as shown in Table 11. The discriminative powers of the predictor variables were again rather weak as the values of Wilks' Lambda and Canonical correlation indicate, although significant as derived from the P-values.

The Stepwise Discriminant Analysis was repeated, separately for the data of the two chronological subsets, i.e. subjects in the 1985-1986 year group and for those subjects in the 1986-1987 year group for the criterion variable account status.

The results of this analysis for the 1985-86 year group with account status as the criterion variable are seen in Table 12.

TABLE 12 RESULTS OF STEPWISE DISCRIMINANT ANALYSIS PREDICTING ACCOUNT STATUS FOR THE 1985-1986 YEAR GROUP (N=240)

Predictor Variable	Partial R ²	F	P>F	Wilks' Lambda*	Canonical correlation*
Amount borrowed	.0793	6.77	.0003	.92	.0264
Economic sector	.0719	6.07	.0006	.85	.0500
Number of loans	.0521	4.29	.0059	.81	.0667
Purpose of loan	.0391	3.16	.0251	.78	.0791
Language preference	.0358	2.87	.0367	.75	.0895
Race	.0342	2.73	.0441	.73	.0993

* p < .001

Six variables could be entered into the model for the 1985-1986 year group at the .05 probability level as shown in Table 12. The prediction model build (Table 12) consists of six predictor variables, four of which are classified as business variables ((1) Amount borrowed, (2) Economic sector, (3) Number of loans, (4) Purpose of loan), contributing most to the prediction equation with Partial R²'s ranging from .0793 (Amount borrowed, P > F = .0003) to .0391 (Purpose of loan, P > F = .0251). The predictor variables, classified as biographical variables which

contributed least to the prediction equation (as derived from the Partial R^2 values) were Language preference (Partial $R^2 = .0358$; $P > F = .0367$) and Race (Partial $R^2 = .0342$; $P > F = .0441$).

When the same kind of analysis was done on the data of the 1985-1986 year group with the dependent variable success/failure the results shown in Table 13 were obtained.

TABLE 13 RESULTS OF STEPWISE DISCRIMINANT ANALYSIS PREDICTING SUCCESS/FAILURE FOR THE 1985-1986 YEAR GROUP (N=240)

Predictor Variable	Partial R^2	F	P>F	Wilks' Lambda*	Canonical correlation*
Economic sector	.0395	9.80	.0020	.96	.0395
Educational level	.0234	5.68	.0180	.94	.0620
Nationality	.018	4.33	.0385	.92	.0789

* $p < .01$

Again only three variables could, at a significance level of $p = .05$, be entered into the prediction model yielding a relatively low prediction. The results shown in Table 13 indicate that the most valuable discriminating variable for this prediction model was 'Economic sector' with a Partial R^2 of .0395. The Discriminant model thus obtained is still rather weak (Wilks' Lambda of .92 and a Canonical correlation of .0789).

The Stepwise Discriminant Analysis was repeated for the 1986-1987 year group of subjects attempting to build a prediction model for the criterion account status and the subsequent results are shown in Table 14.

TABLE 14 RESULTS OF STEPWISE DISCRIMINANT ANALYSIS PREDICTING ACCOUNT STATUS FOR 1986-1987 YEAR GROUP (N=329)

Predictor Variable	Partial R ²	F	P>F	Wilks' Lambda*	Canonical correlation*
Number of loans	.0529	6.05	.0006	.95	.0176
Language preference	.0403	4.54	.0041	.91	.0310
Security cover	.0361	4.04	.0079	.88	.0482
Educational level	.0343	3.82	.0105	.85	.0537
Economic sector	.0259	2.84	.0374	.82	.0616

* p < .001

Five variables ((1) Number of loans, (2) Language preference, (3) Security cover, (4) Educational level, (5) Economic sector) some of them often seen in other prediction models (as depicted in Tables 10, 12 and 13), entered this prediction model at a significant level (p < .05) as shown in Table 14. The level of prediction is, although significant again low as derived from the final values of Wilks' Lambda (.82) and Canonical correlation (.0616).

A final analysis in this series was to carry out a Stepwise Discriminant analysis on the data of the 1986-1987 year group in an attempt to eventually build a prediction model for the criterion success/failure. The results of this analysis are shown in Table 15.

TABLE 15 RESULTS OF STEPWISE DISCRIMINANT ANALYSIS PREDICTING SUCCESS/FAILURE FOR 1986-1987 YEAR GROUP (N=329)

Predictor Variable	Partial R ²	F	P>F	Wilks' Lambda*	Canonical correlation*
Interest rate	.0155	5.14	.0241	.98	.0155
Race	.0194	6.47	.0115	.97	.0346

* p < .05

The predictor variables that were entered in the prediction model as shown in Table 15, produced again a rather weak prediction model (Final Wilks' Lambda = .97, Canonical correlation = .0346) although at a significant level (Interest rate P > F = .0241 and Race P > F = .0115). The results of the Stepwise Discriminant Analyses described up to this point are summarised in Table 16.

TABLE 16 SUMMARY OF BUSINESS AND BIOGRAPHICAL VARIABLES WITH SIGNIFICANT DISCRIMINATING POWER FOR DIFFERENT YEAR GROUPS AND TWO CRITERIA OF SUCCESS

Variables	Criteria of success					
	Account Status			Success/failure		
	85-86	86-87	Total	85-86	86-87	Total
Number of loans	*	*	*			
Language preference	*	*	*			
Economic sector	*	*	*	*		
Own contribution			*			
Number of dependents			*			
Nationality			*	*		*
Security cover		*	*			
Education level		*	*	*		
Race	*				*	*
Amount borrowed	*					
Purpose of loan	*					
Interest rate					*	

As discussed in chapter four some of the biographical and business variables included in this study were measured on nominal scales. However for the purpose of this study the scales used to measure biographical and business predictor variables were considered to possess at least ordinal scale characteristics.

In Table 16 the following nominal measured biographical and business predictor variables were considered to possess ordinal scale characteristics: (1) Language preference, (2) Economic sector, (3) Nationality and (4) Race. The following reasons are stated for why the above nominal measured biographical and business predictor variables were considered to possess ordinal scale characteristics: (1)

Language preference - considering the economical history of South Africa, where the English speaking portion of the South African society traditionally acted as leaders in the economy, it is believed for the purpose of this study that being English speaking rather than Afrikaans speaking represented a higher level of business acumen. (2) Economic sector - the initial capital requirements for starting an independent small business was taken as the criteria to order the subjects included in this study on this predictor variable. Therefore the higher the capital requirements, as for example in the manufacturing sector the greater the possibility that a small business owner in this sector can possibly fail. (3) Nationality - small business owners that are not citizens of South Africa are considered to possess a greater potential to succeed in their new venture than South Africans for reasons discussed in Chapter two. (4) Race - considering the South African history on race segregation and education, it was considered for the purpose of this study that being a member of the white race, then asian, then coloured and last the black race constituted a possible descending scale of economic and business sophistication.

5.3 DISCRIMINANT ANALYSIS

Discriminant Analysis was performed by using the DISCRIM procedure of SAS (1985). The DISCRIM procedure computes linear or quadratic discriminant functions for classifying observations into two or more criterion groups on the basis of one or more predictor numeric variables (SAS, 1985 p. 317).

Therefore, to determine the strength of the prediction model which could be obtained by means of the predictor variables identified in the previous analytical phases, discriminant analysis was carried out.

The percentages of subjects placed in the correct groups in terms of the two criteria ((1) Account status and (2) Success level) by the Discriminant Analyses are shown in Table 17.

TABLE 17 PERCENTAGE OF SUBJECTS IN EACH OF THE FOUR LEVELS OF ACCOUNT STATUS AND THE TWO LEVELS OF SUCCESS CORRECTLY CATEGORISED BY DISCRIMINANT ANALYSES FOR EACH LEVEL

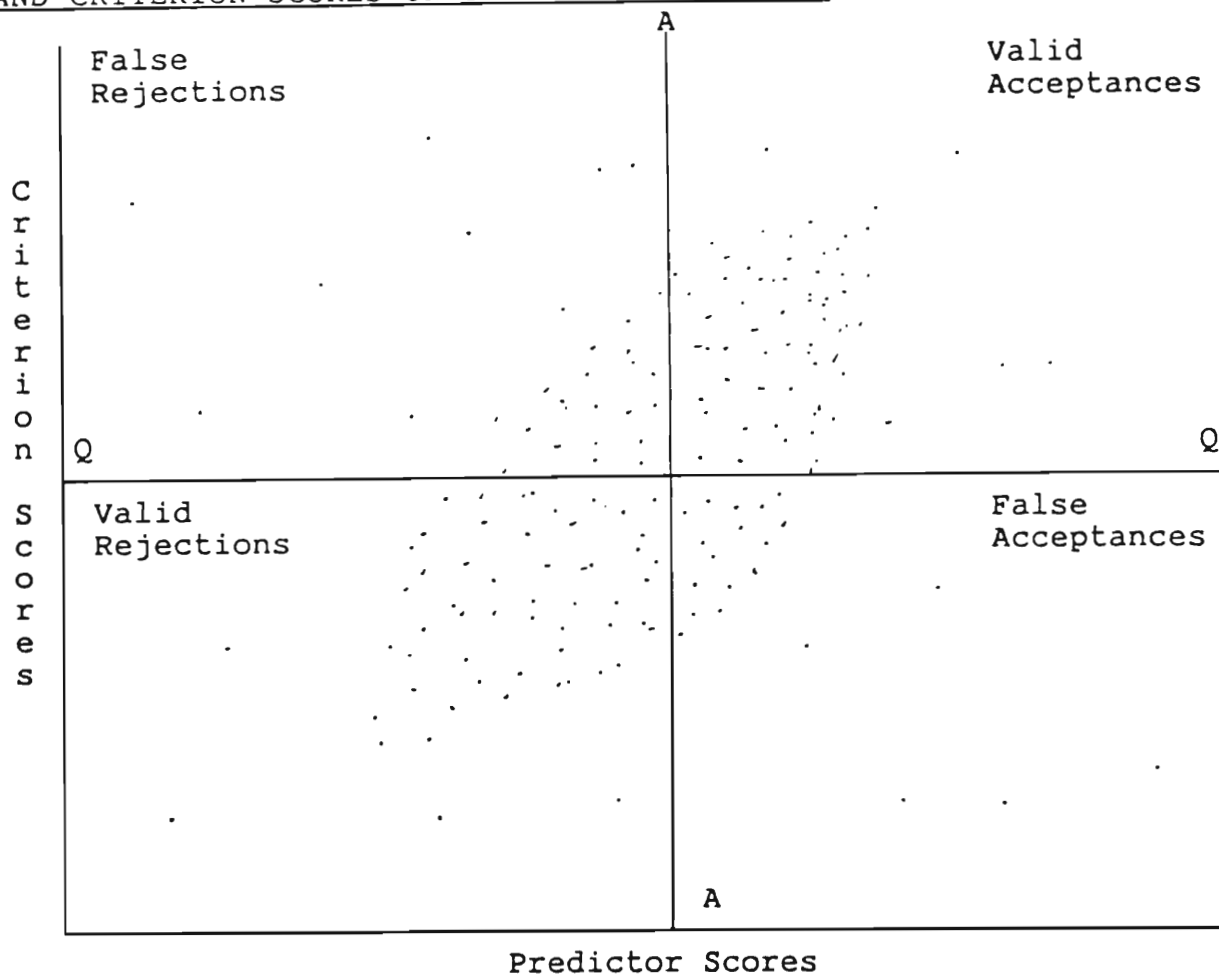
Groups	1985-1986 N = 240	1986-1987 N = 329	Total N = 569
<u>Account status</u>			
Bad debts	43.84%	37.08%	34.57%
Legal control	* a	55.56%	54.55%
Current account	44.44%	30.67%	38.38%
Paid-up loans	47.62%	50.00%	52.17%
<u>Success level</u>			
Unsuccessful	57.78%	31.9 %	25.24%
Successful	66.00%	84.98%	86.50%

a:N<25

The results of the Discriminant Analyses (i.e. the placing of subjects into groups by means of the predictor variables) can be compared to the real placement (in terms of success levels) of subjects as obtained from the venture capitalists' files to establish whether the prediction model constructed has any value for the selection process of the venture capitalist.

To facilitate this comparison a model which is commonly used in decision-making in the personnel selection field (Beach, 1985) was utilised. The model is shown in Figure 4.

FIGURE 4 MODEL OF INFLUENCE OF RELATIONSHIP BETWEEN PREDICTOR- AND CRITERION SCORES ON SELECTION DECISIONS



Derived from: Beach, D.S. (1985). Personnel - The management of people at work (5th ed.) p.156. New York : McMillan Publishing Company.

Using a model as shown in Figure 4, the results obtained by a selection procedure used by an organisation can be compared with predicted results, e.g. results which would have been obtained if the predictors identified as significant were used in the selection procedure. In the present case the number and percentages of Valid Acceptances, False Acceptances, Valid Rejections and False Rejections could be determined, both for the reality i.e. as manifested in the venture capitalist's records and for the predictions i.e. the categorisation of subjects obtained by means of discriminant analyses. This comparison is made in Tables 18 and 19.

TABLE 18 TABLE OF PREDICTED SUCCESS LEVELS (PERCENTAGES) USING SIGNIFICANT BIOGRAPHICAL/BUSINESS VARIABLES ON THE SMALL BUSINESS OWNERS' ACCOUNT STATUS

Groups	1985-1986 N = 240		1986-1987 N = 329		Total N = 569	
	Unsuc %	Succ %	Unsuc %	Succ %	Unsuc %	Succ %
	FR	VA	FR	VA	FR	VA
Success- ful	23.3	39.2	31	33.7	25.1	38.7
Unsuccess- ful	22.1	15.4	20.1	15.2	19.7	16.5
	VR	FA	VR	FA	VR	FA

FR = False rejection
 VR = Valid rejection
 VA = Valid acceptance
 FA = False acceptance

TABLE 19 TABLE OF PREDICTED SUCCESS LEVELS (PERCENTAGES) USING SIGNIFICANT BIOGRAPHICAL/BUSINESS VARIABLES ON THE SMALL BUSINESS OWNERS' SUCCESS LEVEL

Groups	1985-1986 N = 240		1986-1987 N = 329		Total N = 569	
	Unsuc %	Succ %	Unsuc %	Succ %	Unsuc %	Succ %
	FR	VA	FR	VA	FR	VA
Success- ful	21.2	41.3	9.8	55	8.6	55.2
Unsuccess- ful	21.7	15.8	11.2	24	9.1	27.1
	VR	FA	VR	FA	VR	FA

FR = False rejection
 VR = Valid rejection
 VA = Valid acceptance
 FA = False acceptance

The information in these Tables seems to indicate that the selection (prediction) models created by the analyses in

this study, if implemented, would improve the selection of small business owners to be granted loans in the sense that fewer false acceptances (loans granted but the business failed) would be found. The prediction model therefore seems to be more capable of eliminating failures than the selection model used by the venture capitalist. At the same time this obviously happens at the cost of, eliminating some borrowers who would have been successful - the normal situation when a validated selection procedure is used (Schutte et al., 1990).

If results of the selection procedure used by the venture capitalist at present (as obtained from the files of the venture capitalist) are translated to fit into the model shown in Figure 4 it becomes possible to construct Table 20 for purposes of comparison.

TABLE 20 COMPARISON OF RESULTS OF SELECTION PROCEDURE EMPLOYED BY THE VENTURE CAPITALIST WITH RESULTS OF PREDICTION MODEL

	1985-86 N=240		1986-87 N=329		Total N=569	
	VA %	FA %	VA %	FA %	VA %	FA %
Current selection procedure used	62.5	37.5	64.7	35.3	63.8	36.2
Prediction model (account status)	39.2	15.4	33.7	15.2	38.7	16.5
Prediction model (success/failure)	41.3	15.8	55	24	55.2	27.1

VA = Valid acceptance
FA = False acceptance

The results in Table 20 seem to indicate that use of the prediction models would decrease the percentage of

individuals who are given loans but fail as small business owners (False acceptance). This would happen at the cost of eliminating (by not giving loans) a sizeable larger percentage of applications than is the case when using the selection procedures currently employed by the venture capitalist.

Although the prediction models would decrease the percentage of individuals who are given loans but fail as small business owners at the cost of eliminating a larger percentage of applications it can be justified by the "selection ratio" increase between the percentage valid acceptances and false acceptances. These ratios are shown in Table 21.

TABLE 21 SUCCESS-TO-FAIL RATIO'S OBTAINED IN THE COMPARISON OF VALID ACCEPTANCES WITH FALSE ACCEPTANCES

	1985-86 N=240	1986-87 N=329	TOTAL N=569
Current selection procedure used	1,67	1,83	1,76
Prediction model (account status)	2,54	2,22	2,35
Prediction model (success/failure)	2,61	2,29	2,04

From Table 21 it can be seen that by using the prediction models a better selection ratio would be obtained than implementing the current selection procedure used by the venture capitalist.

5.4 SUMMARY OF RESULTS

Significant differences between groups in the "account status" categories, were obtained for eleven of the original thirty biographical and business predictors analysed by means of One-way Analysis of Variance and Chi-

square as shown in Table 6, in the first phase of the analysis. Significant differences between groups in the "success level" categories, were obtained for only six biographical and business predictor variables included in the study as depicted in Table 7. Results obtained for the groups whose loan applications were granted ((1) bad debts, (2) legal control, (3) current account (4) paid-up loans) compared with the group whose loan applications were rejected (rejections) on One-way Analysis of Variance and Chi-square Analysis indicate (Table 8 and Table 9) that significant differences were obtained. On the criterion variable "account status" for the group 'rejections' compared to the other groups whose loan applications were granted, significant differences were obtained for twelve biographical and business predictors which is similar to the results obtained for the same criterion shown in Table 6.

Stepwise Discriminant analysis revealed that only twelve of the predictor variables as identified in the first phase (Chi-square analysis and One-way Analysis of Variance) of the analytical procedure could be retained to enter the final prediction model. Of these twelve predictor variables, five predictor variables appeared as predictors in both year groups and the total group with two predictor variables as a predictor in the total group and in at least one of the year groups as shown in Table 16.

Discriminant analysis then categorised the subjects into criteria groups by means of the predictor variables identified by the previous analysis of Chi-square, One-way Analysis of Variance and Stepwise Discriminant analysis.

Then by using a model used in decision-making in the personnel selection process, as depicted in Figure 4, results obtained by the selection procedure used by the venture capitalist can be compared with the predicted

results as obtained from this study's Discriminant analysis. The results therefore obtained indicated a significant improvement on the selection ratio of the venture capitalist (Table 21) by implementing the selection model constructed by this study.

CHAPTER 6

DISCUSSION

This chapter compares the present study's sample characteristics with that of previously reviewed studies. This is followed by a discussion of each of the analytical procedures utilised to compare the results obtained in this study with previously reviewed studies. The limitations of the present study are then outlined and possible answers to the research questions given followed by some recommendations for future research.

6.1 COMPARISON OF PRESENT SAMPLE TO PREVIOUSLY REVIEWED STUDIES

The sample size of this study (i.e. 569 successful and unsuccessful small business owners) is large compared to sample sizes of most of the previously reviewed studies (i.e. Fraboni & Saltstone (1990), N=81; Kaish & Gilad (1991), N=51; MacMillan et al. (1987) N=150; Miner (1990), N=135; Ohe et al (1990), N=125; Sexton & Bowman-Upton (1990), N=174). Of the 569 small business owners, 136 were female, a figure which is larger than the average sample size (N = 60) of studies on female entrepreneurs (Moore, 1990). The sample size achieved in this study was largely determined by the anticipated statistical analysis (Emory, 1985) to be implemented in solving the research questions and the use of a secondary data source (Venture Capitalist's files). The use of a secondary data source, as in the case of this study is in line with pleas by Cascio (1976), Fried and Hisrich (1988) and Marino et al. (1989) for greater utilisation of available secondary data sources in research on entrepreneurship. The use of a secondary data source enabled this study to select from a broader group of small business owners so that subgroups within the general sample could be extracted, (i.e. male/female; successful/unsuccessful small business owners) and their responses compared and contrasted

(Fraboni and Saltstone, 1990). The average age of the subjects of this sample (39,5 years) falls within the popular age range (30 - 40 years) of entrepreneurs as identified by previous studies (Birley, Moss & Saunders, 1987; Brockhaus & Nord, 1979; Cromie & Hayes, 1988; Hornaday & Aboud, 1971; Litvak & Maule, 1973; Ohe, Honjo & MacMillan, 1990; Silver, 1988; Thorne & Ball, 1981). However, the mean age of members of the successful group (39,7 years) as identified in this study, differs significantly from Brockhaus' (1980b) successful entrepreneurs' mean age (23,4 years). The mean ages of the unsuccessful groups, in this study (39,2 years) and Brockhaus's (1980b) study (36,6 years), seem more similar. It appears as though the mean age of Brockhaus's successful groups is unique when compared to the findings of previous studies in other words, Thorne and Ball (1981) found in their study a mean age of 34,8 years for successful entrepreneurs and Ohe, Honjo and MacMillan (1990) found a mean age of 35 years for successful Japanese entrepreneurs.

No significant difference in the mean ages of female small business owners (38,4 years) and male small business owners (39,8 years) was found for this study, although on average the males were slightly older. This finding supports Cromie (1987) and Sexton & Bowman-Upton's (1990) conclusion that age did not constitute one of the major differences between male and female entrepreneurs.

The majority (84 per cent) of the subjects included in this study are married. This result is in line with the findings of Fraboni and Saltstone (1990), Howell (1972), Silver (1988) and Thorne & Ball (1981). A significant difference ($F = 23.37$; $p = 0.0001$) was found in the marital status of female small business owners (77,9 per cent married) and male small business owners (86 per cent married). A significant ($F = 5.65$; $p = 0.0189$) larger percentage (85 per cent) of successful female small

business owners were married in contrast to only 61,9 per cent of the unsuccessful female small business owners being married. No significant difference on marital status were found for successful (86,1 per cent married) and unsuccessful (85,8 per cent married) male small business owners. This study therefore seems to indicate that being married contributes to the success rate of female small business owners. This finding supports Brockhaus's (1980b) conclusion that successful entrepreneurs tended not to be divorced and probably were able to receive the support of their spouses, in other words emotional support or someone who could be a "sounding board" for ideas. Another crucial aspect of possible support is that a working spouse's salary may provide the needed funds to allow the business to survive the periods of unexpected start-up costs and poor cash flow during the early stages of a business. This conclusion seems to be a possible explanation for the high percentage of successful female small business owners being married. Therefore, one cannot but agree with Brockhaus (1980b) that any of these forms of support received from a spouse may have been crucial to the success of a new venture.

Other authors (Cromie, 1987; Thorne and Ball, 1981) have previously argued that experience is a characteristic of successful entrepreneurs. In this study the influence of prior work history on the level of success is depicted in Table 5. When the successful group is compared to the unsuccessful group the following results were obtained. Of the successful group 43,3 per cent of the subjects embarked on a new venture similar to that of their previous work experience, in contrast to the unsuccessful groups of only 35,4 per cent. A relatively large portion of the successful group therefore used their previous work experience to their own benefit and this result is consistent with the findings of Roure and Maidique's (1986) study on prefunding factors influencing the success of

start-up companies. No significant differences were obtained for gender on the variable previous work experience and this finding supports Cromie's (1987) and Kalleberg & Leicht's (1991) similar findings for gender. However, a significant difference ($F = 5.21$; $p = 0.023$) was obtained for the variable previous work experience when successful and unsuccessful male small business owners were compared. Of the successful male small business owners 48,7 per cent embarked on a new venture similar to that of their previous work experience, in contrast to the 37,5 per cent of unsuccessful male small business owners. Kaish and Gilad (1991) found in their study of entrepreneurs and executives that level of success and related previous experience go hand in hand for entrepreneurs ($r = 0.38$; $p < 0.01$), but the same result did not hold for the executives in their sample. It could therefore be concluded that to be successful in an own venture it would be advisable to have prior experience in the field of the venture.

An obvious difference seems to exist between successful and unsuccessful groups on the variable, "economic sector involved in" (Table 5), it appears that a larger percentage of the successful group (31,7 per cent) are involved in manufacturing compared to only 23,3 per cent of the unsuccessful group. It emerged from the literature reviewed that some researchers (Cromie & Hayes, 1988; Hisrich, 1990; Kalleberg & Leicht, 1991) concluded that a definite difference exists between male and female entrepreneurs in terms of the type of new business venture that the genders embark upon. In contrast, this study found no significant differences between male and female small business owners in terms of the type of new business venture that they start. However, it appears (Table 5) that male and female small business owners are

predominantly in the retail sector (male = 32,3%; female = 39%) and in the manufacturing sector (male = 29,6%; female = 25,7%).

From the literature reviewed some researchers (Cromie, 1987; Cromie & Hayes, 1988; Hisrich, 1986) concluded that certain definite differences exist between male and female entrepreneurs. This study indicates that female small business owners are slightly more successful (69,1 per cent) in their new ventures compared to the success rate of their male counterparts (62,1 per cent). Significant differences between male and female small business owners could only be found for five (as depicted in Table 22) of the original thirty biographical and business predictor variables identified for the purpose of this study.

TABLE 22 RESULTS OF VARIABLES ON WHICH SIGNIFICANT DIFFERENCES EXISTED FOR ONE-WAY ANALYSIS OF VARIANCE WITH SEX AS DEPENDENT VARIABLE

Predictor Variable	DEPENDENT VARIABLE : SEX		
	1985 - 1987		
Variables	F	df	P
Marital status	23.64	1	0.0001
Amount loaned	11.63	1	0.0007
Number of dependents	7.95	1	0.0050
Business form	6.88	1	0.0089
Language preference	3.92	1	0.0483

The significant difference obtained in the predictor variable marital status (Table 22) for male and female small business owners has already been discussed above. On the predictor variable "amount loaned" as shown in Table 22, on average male small business owners obtained a significantly larger sum (R60 949) from the venture capitalist than did female small business owners (R37 110). This finding seems to support Hisrich and O'Brien's (1986,

as cited in Hisrich 1986) and Sexton and Bowman-Upton's (1990) conclusion that women entrepreneurs have particular problems obtaining credit.

For the predictor variable "number of dependents" (Table 22) on average female small business owners have fewer dependents (2,2) than have male small business owners (2,69). On the predictor variable "business form" (Table 22) it appears that male small business owners predominantly preferred to use a corporate umbrella as a favoured form of business (54 per cent) whereas the largest proportion of female small business owners used sole-proprietorships (59 per cent). This result is contrary to that of Birley et al. (1987) who suggest that women entrepreneurs are more likely to use a corporate form of business. Finally, on the predictor variable "language preference" (Table 22) it seems that female small business owners mostly prefer to communicate in Afrikaans (75,7 per cent) while to a lesser degree only (66,7 per cent) of male small business owners communicate in Afrikaans. The result that the majority of male and female small business owners included in this study prefer to communicate in Afrikaans could possibly be explained that Afrikaans is predominantly spoken in the region (Northern Transvaal) where the sample was obtained. In light of the few significant differences found for the dependent variable 'sex' in this study as depicted in Table 22, one can conclude in support of Chrisman (1990), Hisrich (1990) and Sexton & Bowman-Upton (1990) that male and female small business owners appear to be more similar than different. Thus, agreeing with Kalleberg and Leicht (1991), it may be that a small business owner's gender has little relevance to the survival and success of his/her new venture.

From an educational point of view some differences seem to exist between successful and unsuccessful groups. 16,8 per cent of the successful group did not finish school in

comparison to 25,2 per cent of the unsuccessful group. 40,2 per cent of the successful group had undergone some form of tertiary education compared to only 30,6 per cent of the unsuccessful group. Therefore it appears as though a positive correlation exists between the level of success and the level of education of entrepreneurs, in other words the higher a small business owner level of education, the greater the probability that his/her new venture will be a success. This finding contrasts with the findings of some previous researchers (Jacobowitz & Vidler, 1982; Kent, Sexton & Vesper, 1982; Pickles & O'Farrell, 1986) who found that entrepreneurs are less educated than the general population.

Some significant differences were found on the criterion 'level of success' for the predictor variable race. The results (Table 5) indicate that only 50,9 per cent of the black subjects included in the study were successful compared to the 66,7 per cent of the white subjects included being successful in their businesses. This result can probably be attributed to the complex socio-economic situation present in South Africa. This phenomenon can possibly be better understood when a recent article on entrepreneurship in South Africa by Brockhaus (1991) is taken in consideration. Brockhaus (1991) comments that some Black South African communities have traditional customs in which all property belongs to the community and all members of the community share relatively equally in food, shelter, and so forth and that the capitalistic practices of both English and Afrikaans-speaking whites are not easily understood or accepted by Blacks. Moreover, the practices of the white government in South Africa in the past further prevented capitalistic concepts from being considered positively by Black South Africans. This view of Brockhaus (1991) and possibly the poor education system provided for Blacks in South Africa in the past, also taking into account the results of this study regarding

education, the difference obtained on the predictor variable race in this study may be partially explained.

Small business owners who are not South African citizens appear to be more successful than their South African counterparts. The results in Table 5 indicate that 85 per cent of non-South Africans are successful whereas only 62 per cent of their South African counterparts are successful in their businesses. This finding supports those of Cooper & Dunkelberg (1986) and King (1986) that entrepreneurs are more likely to be of "foreign stock".

A controversial difference between successful and unsuccessful small business owners' businesses, seems to be the interest rate on loans granted to them. The mean interest rate (6,3) of successful groups is higher than the average interest rate of the unsuccessful group (5,9). Although the mean risk classification (as done by the venture capitalist) of successful small business owners (1,9) is lower than that of unsuccessful small business owners risk classification (2,0), the phenomenon of the difference between the interest rates warrants further research on this variable.

The sample has been described and compared in general terms by means of the dichotomous criteria of level of success and gender on (1) predictor variables that distinguished significantly between the criterion variables and (2) common predictor variables identified in past research reviewed. Therefore one can conclude that although the sample captured is much bigger than average samples used in past research, in character it is quite similar to past research samples with the main difference that successful small business owners are compared to unsuccessful small business owners.

6.2 ONE-WAY ANALYSES OF VARIANCE AND CHI-SQUARE

One-Way Analysis of Variance with Bonferroni's Ranges Test specified (only ordinal predictor variables) and Chi-square analysis (only nominal predictor variables) revealed that the criteria employed in this study can be distinguished significantly by some of the predictor variables. For the criterion variable "account status" for the total group and two year groups combined, eleven predictor variables could be identified (as shown in Table 6) that distinguished on a significant level ($p = 0.05$) between the criteria variables. Of these eleven predictor variables, six were categorised as being biographical and five as business predictor variables. As already stated, Bonferroni's Ranges Test was specified (only ordinal predictor variables) in all cases where One-Way Analysis of Variance were performed. This statistical procedure gave an indication between which of the subgroups of the criterion variable "Account status" significant differences were found. Small business owners classified as "legal control" borrowed on average (R81 195) more than small business owners classified as "current account" (R59 557). Small business owners classified as "bad debts" had on average less security cover (0,99) than small business owners classified as "legal control" (1,63). Small business owners classified as "bad debts" have on average a lower level of education (6,07) in comparison to small business owners classified as "current account" (6,84). Possible explanations for these results are discussed in the next paragraph.

The results obtained for the analyses for the criterion variable "success level", revealed that only six predictor variables could distinguish significantly between the dichotomous criteria variables (as shown in Table 7). Of these possible predictor variables identified, three were biographical and three business predictor variables. The

business predictor variable "own contribution" indicates that on average unsuccessful small business owners financially contributed (41,3 per cent) more to the establishment of their new venture than successful small business owners who contributed only 38,21 per cent. Successful small business owners borrowed on average less (R54 618) than unsuccessful small business owners (R56 452) from the venture capitalist. In light of these findings it appears that unsuccessful small business owners included in this study had larger businesses in financial terms than successful small business owners. However, the security cover of successful small business owners on average (1,2) is slightly higher than that of unsuccessful small business owners (1,1). Therefore it appears that to be successful one must try to establish a not too large new venture with as little as possible of your own capital invested in the new venture. A possible explanation of this finding is that during periods of unexpected start-up costs and poor cash flow a small business owner will need his/her own capital to help the new venture to survive.

These results indicate that significant differences do exist between successful small business owners and unsuccessful small business owners and therefore answers the first research question, in other words, "Do significant differences exist between successful small business owners and unsuccessful small business owners on biographical and business variables?"

Brockhaus (1980b) found in a longitudinal study done on psychological and environmental factors which distinguish a successful entrepreneur from an unsuccessful entrepreneur, there were only two biographical variables that distinguished significantly ($p = 0,005$) between successful and unsuccessful entrepreneurs. These biographical variables were 'age' and 'marital status'. However, not one of the two biographical variables

identified by Brockhaus's (1980b) study managed to distinguish at a significant level between successful and unsuccessful small business owners included in this study which could probably be explained by different compositions of the samples of the two different studies (Moore, 1990). In summary, the results obtained from the One-Way Analyses of Variance and Chi-square analysis for the criteria employed in this study, indicate that there may be biographical and business differences between small business owners at the time they start a business which contribute to the likelihood of success for the new venture. However, because these analyses were only part of an elimination process, no further meaningful interpretation of the results obtained can yet be made.

6.3 STEPWISE DISCRIMINANT ANALYSES

The results obtained for Stepwise Discriminant Analyses for the criteria, for the two-year groups and total group, are summarized in Table 16. The predictor variables that appeared as results of the three sets of analyses (the two-year groups and the total group) as predictors of success or failure appear to be different with remarkably little overlap. Only the predictor variables (1) number of loans granted, (2) language preference and (3) economic sector in which the business operated, appeared as predictors in both year groups and the total group. The previously mentioned predictor variables as well as the following predictor variables (1) nationality, (2) security cover, (3) educational level and (4) race appeared as predictors in the total group and in at least one of the year groups. The instability of the predictors over year groups can be attributed to inherent instability of biographical predictors because of possibly too small sample sizes in the two different year groups (Muchinsky, 1987).

A second reason could be the differentiation of factors causing failure of entrepreneurial businesses over time. Greater stability of predictors and predictions can possibly be achieved by stretching the study over a longer time period. The predictors which did appear seem to be quite different to those found in previous studies (Brockhaus, 1980b; Cascio, 1976). Most of the "traditional" biographical variables such as age, gender, marital status, failed to survive the elimination process used in this study (Analyses of Variance, Chi-square, and Stepwise Discriminant Analyses). Very few studies that have been reviewed attempted to specifically distinguish successful from unsuccessful entrepreneurs (Brockhaus, 1980b) using biographical and business predictors (MacMillan et al., 1987). However, a number of studies reviewed (Hornaday & Aboud, 1971; Kalleberg & Leicht, 1991; Litvak & Maule, 1973; MacMillan et al., 1987) did try to establish characteristics of successful entrepreneurs mostly by utilising other independent variables (in other words, target market (Roare & Maidique, 1986); characteristics of target market, forecast financial characteristics (MacMillan et al., 1987)) than the biographical and business variables used in this study.

6.4 DISCRIMINANT ANALYSES

To investigate the power of the biographical and business predictors to discriminate between successful and unsuccessful small business owners a series of Discriminant Analyses were performed.

This was an attempt to find an answer to the third research question: "Can the level of success of small business owners' businesses be predicted by means of biographical and business variables?"

The classification results (placing of subjects into groups by means of predictor variables) for the predictor variables entered are depicted in Table 17. The average percentage of subjects correctly placed for the criteria variables (1) account status and (2) success level for the two year groups and total group are shown in Table 23.

TABLE 23 AVERAGE PERCENTAGE OF SUBJECTS CORRECTLY CATEGORISED BY DISCRIMINANT ANALYSES FOR THE TWO CRITERIA VARIABLES (1) ACCOUNT STATUS (2) SUCCESS LEVEL

Criterion Variable	1985 - 1987	1986 - 1987	Total
Account Status	45.30 %	43.33 %	44.92 %
Success Level	61.89 %	58.44 %	55.87 %

It appears from the results in Table 23 that the best classification model to discriminate between successful and unsuccessful small business owners is that of the dichotomous criterion of success level. The results depicted in Table 23 are similar to the discriminant results obtained by Fraboni and Saltstone (1990) in their study of first and second generation entrepreneurs. Fraboni and Saltstone's (1990) discriminant function was able to correctly classify 68,14 per cent of the subjects in their study. Brockhaus and Nord's (1979) study of entrepreneurs and managers found that their discriminant function was able to correctly classify 72,5 per cent of the subjects. In light of the cited study's discriminant function results it can be concluded that this study's discriminant functions were reasonably effective in classifying subjects into their appropriate groups.

The results of the Discriminant Analyses were then compared to the real placement (in terms of success level) of subjects as obtained from the venture capitalists' files by utilising a decision-making model as shown in Figure 4. These comparisons are shown in Tables 18 and 19, and are summarised in Table 20. As already discussed in chapter

five, these comparisons seem to indicate that the use of the prediction models developed by this study would decrease the percentage of individuals who are given loans but fail as small business owners. This would occur at the cost of eliminating (by not giving loans) a larger percentage of applications than is the case when using the procedures currently employed by venture capitalists. This type of selection error, false rejections, should be weighed up (Cascio, 1976) by venture capitalists, in other words they may decide that false acceptances are more costly than false rejections since a greater monetary investment is involved.

However, from the selection ratios obtained, as shown in Table 21, it becomes clear that the prediction models developed by this study for the prediction of level of success would yield a better selection of possible successful small business owners than the selection criteria presently used by venture capitalists.

Therefore, the results discussed appear to indicate that the use of biographical and business variables as predictors holds promise for improving the selection process used to decide which small business owners should be funded by a venture capitalist. This finding concerning biographical and business variables as predictors of small business success, is wholeheartedly supported by Cascio's (1976) and McDaniel's (1989) conclusion that biographical variables have been known to be of great value in predicting performance across a wide variety of settings. Therefore, the above appears to provide an answer to the third research question, i.e. "Can the level of success of small business owners be predicted by means of biographical and business variables?"

6.5 LIMITATIONS OF PRESENT STUDY

A number of limitations can be identified.

6.5.1 The sample

Although a relatively large sample was obtained, when compared to previous research sample sizes as discussed earlier in this chapter, the sample does have certain limitations. Because the research was carried out on existing data there were a number of constraints on the researcher in capturing the sample. For reasons discussed in chapter four, clients of the venture capitalist who participated in the three financial schemes that cater for the smaller sums of financial assistance, had to be omitted from the study. Therefore, one of the shortcomings of this study can be attributed to the omission of small loans granted which form the core of the three financial schemes omitted and which consequently made the sample less representative of small business owners in South Africa. In future research a recommendation could be made to venture capitalists to use a uniform application form that would counter the present limitation and broaden the spectrum of small business owners researched.

6.5.2 Criteria of level of success

The criteria decided upon (i.e. (a) account status : (1) bad debts, (2) legal control, (3) current account, (4) paid up loans and (b) success level : (1) successful small business owners, (2) unsuccessful small business owners) are crude and have certain limitations. Unfortunately, financial ratios and information were either unobtainable or unreliable for the small business owners ventures as these would have created a more reliable and valid means of grouping successful and

unsuccessful small business owners. A possible solution to this problem for future research is a qualitative judgement of the small business owners' success level by the venture capitalist and then combining this qualitative rating with the present quantitative success rating.

6.5.3 Identified biographical and business variables

The number of biographical and business variables included in this study were limited to "what was available", because this study was done on existing data. Thus some biographical and business variables found to be related to entrepreneurship as identified by previously reviewed research, were not included in this study. This is unfortunately one of the limitations of using secondary data for which there is no ready solution.

6.6 RECOMMENDATIONS FOR FUTURE RESEARCH

Firstly, not much attention was given in this study to the influence of personality characteristics of small business owners on the performance of their businesses. If an assumption is made that the success or failure of a small business venture can be explained by an equal share of personality and biographical/business variables, then this study cannot contribute fully towards understanding the phenomenon of entrepreneurship. Therefore a combination study of personality and biographical/business variables could be used as a departure point for future research that attempts to predict the level of success of small business owners' ventures.

Secondly, the use of a more qualitatively based criterion variable to distinguish between successful and unsuccessful small business owners rather than a purely quantitative

criterion would provide a better reflection of the success level of the small business owners. For this reason future researchers could find the development of a reliable and valid criterion of small business owners' success level to be one of their most challenging research problems.

Finally, the timespan covered by this study was too short and inadequate to obtain generalisable results. It will thus be feasible if a longitudinal research project could be carried out over a much longer timespan.

6.7 CONCLUSION

The present study revealed that certain biographical and business variables are promising as predictors of the level of success of small business owners. The contribution of this study is probably in providing a better understanding of the entrepreneurial phenomenon, possibly only because it indicates the lack of clarity which exists in this area. Therefore it is hoped that the implication of this study would enable venture capitalists (in a small way) to identify entrepreneurial potential at an early stage and ensure that the right person is financially supported, hereby minimising losses caused by the financing of business ventures that eventually fail.

Thus, if the above could be achieved it would contribute in a positive way to much needed economic growth in South Africa considering Moolman's (1990b) scenario sketch of South Africa by the year 2000.

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APPENDIX A CODIFICATION OF PREDICTOR VARIABLES EXTRACTED FROM THE FILES OF THE VENTURE CAPITALIST

Class variables:

1. Year group: 1 = 1985 01-04-85
31-03-86
2 = 1986 01-04-86
31-03-87
3 = 1987 01-01-87
31-12-87
2. Account status: 0 = Rejections
1 = Bad debts
2 = Legal control
3 = Current account
4 = Paid-up loans
3. Account number: As given by the venture capitalist

Biographical predictor variables:

1. Race: 0 = Black
1 = White
2 = Coloured
3 = Asian
2. Language preference: 1 = Afrikaans
2 = English
3. Residential area: 1 = City
2 = Town
3 = Rural
4. Education: 1 = St. 6
2 = St. 7
3 = St. 8
4 = St. 9
5 = St. 10
6 = Technical College completed
7 = Technical College not completed
8 = Technikon completed
9 = Technikon not completed
10 = College of Education completed
11 = College of Education not completed
12 = University completed
13 = University not completed
14 = Postgraduate completed
15 = Postgraduate not completed
16 = College of Commerce
5. Number of dependents: As given by the venture capitalist
6. Sex: 1 = Male
2 = Female

7. Nationality: 1 = South African
2 = Not South African
8. Resident/Non-resident status: 1 = Resident
2 = Non-resident
9. Age: As given by the venture capitalist
10. Employment history: 1 = Related to current organisation
2 = Not related to current organisation
3 = Organisation exists already
11. Apprenticeship/clerkship: 1 = Apprenticeship completed
2 = Clerkship completed
3 = None of the above
12. Marital status: 1 = Single
2 = Married
3 = Divorced
4 = Widow/er
13. Criminal record: 1 = Yes
2 = No
14. Sequestration record: 1 = No
2 = Yes

Business predictor variables:

1. Economy sector: 1 = Manufacturing
2 = Retail
3 = Wholesale
4 = Services
5 = Construction
6 = Foods
2. Purpose of financing: 1 = Take-over
2 = New business
3 = Expand existing business
4 = Creditors' repayment
5 = Unknown
3. Number of loans: As given by the venture capitalist
4. Total amount borrowed: As given by the venture capitalist
5. Percentage of own contribution to new venture: As given by the venture capitalist
6. Security cover: As given by the venture capitalist

7. Interest paid on loans: 1 = 10 %
2 = 11 %
3 = 12 %
4 = 13 %
5 = 14 %
6 = 15 %
7 = 16 %
8 = 17 %
9 = 18 %
10 = 19 %
11 > 20 %
8. Type of Venture: 1 = Sole proprietor
2 = Partnership
3 = Closed corporation
4 = Company
9. Development state of Venture: 1 = Existing
2 = New
3 = Take-over
10. Employment existing: As given by the venture capitalist
11. Employment additional: As given by the venture capitalist
12. Risk classification: 1 = Low
2 = Medium
3 = High
4 = Very high
13. Status of entrepreneur in venture: 1 = Sole proprietor
2 = Partner
3 = Member
4 = Shareholder
14. Entrepreneurs' % royalty: As given by the venture capitalist