REVIEW OF LITERATURE

Studies on innovation are abound mainly in the fields of education, agricultural extension, technology and health. Definitions of innovation provides for two different conceptual schemes - innovation being synonymous to a new product and innovation being an early adaption of a new idea, product or method. In other words, referred to as a 'new practice'. In the present study the 'new practice' definition of innovation as found in the sample was considered. Hence, the review of literature consisted of only such studies which treats innovation in the sense that it is a new practice. After that, studies relating to the specific variables of the present study are presented. Research questions arising out of the review are followed by the formulation of appropriate hypotheses. The review of literature also refer to the studies on the methodology of measurement of innovation, innovativeness as a personality variable, innovativeness as a inevitable human resource input and identification of those personality variables which are suspected to be related to innovative personality.

MEASUREMENT OF INNOVATION

Hage and Dewar (1978) conducted a study on 16 health and welfare organization that provide rehabilitation services and innovation was measured as any new program that involved a client or activity that was new for the organization. To
determine whether the programs were new, the executive
directors of the firms were asked a large number of follow-up
questions about what was done, who the clients were, when the
program was initiated, how many clients were involved, how it
was financed, who had the original idea and so forth.

On an 20 randomly selected schools in seven districts in the
San Francisco Bay Area, Baldridge and Burnham (1975)
approached principals, superintendents and department
chairman to specify innovations adopted by them which met the
criteria, viz., extensiveness, importance, and longevity
potential. Of the innovations specified by them, new reading
program and new teaching approaches were considered as
innovations.

Corwin's (1972) study on Teacher Corps Programs on schools,
measured innovation based on the scores of all reported or
observed, intended and unintended changes rated by two
judges. Judgment of each innovation was based on a three-
point scale on each of the five dimensions: new classroom
methods, new materials, changed relationship with clientele,
the addition of implementing personal and extra-curricular
activities.

Monge, Cozzens and Noshir (1992) conducted a study on five
manufacturing companies and innovation was measured as the
total number of innovative ideas received into the innovation
system in each organization.
Downs and Mohr (1976) after reviewing the results of studies of different kinds of innovation suggested three measures to determine innovation. First, the assignment to each organization of an innovation score based on its time of first adoption or use. Second, simple, dichotomous adoption or non-adoption. Third, the extent to which an organization has implemented an innovation, or the degree to which an organization is committed to it.

Hansen (1992) in his study of 513 companies, measured innovation based on two indicators. First, the number of new products introduced by the firm in the previous five years. Second, by asking the firm the percentage of sales resulted from products that were first introduced in the previous five years.

Blau and McKinley (1978) conducted a study on a sample of American Architectural firms. Their objective was to compare the organizational characteristics like size, organizational complexity, technology, formalization and environmental complexity between innovative and less innovative firms. The division of architectural firms into innovative and less innovative was done on the basis of the number of architectural awards won by the firm in the preceding five years.

In a study conducted on scientists, engineers and managers of 500 chemical companies, Dunchon, Ashmus and Dunegan (1992) identified innovators and non-innovators by having discussion
with firms executives. A executive was considered as an innovative person when he was capable of producing a product or process, or an idea leading to a product or process that is new to the firm. This measurement was formerly used by Zaltman, Duncan and Holbeck (1973). For criterion validity, Kirton Adaptation Innovation Inventory (1976) was used.

STUDIES ON INNOVATOR

An extensive review of literature relating to the psychological correlates of an innovator has been carried out by Rogers and Shoemaker (1972); Kirton (1989); and Goldsmith (1989). A summary of Rogers and Shoemaker is been presented in the chapter of Introduction. and a summary of KAI correlation results presented by Kirton (1989; pp 28-30) is been presented below. Few more studies on Innovative personality are reviewed here.


Innovator is said to be a person who observes the world around to him to be coherent and feels that it will respond in a predictable way to his efforts to change it. He feels great need for autonomy, achievement, order and he offers help to others (Miles, 1964; Me Clelland, 1985).

An innovator is a person who is inclined to "do things differently" as against persons who "do things better. He is capable of thinking tangentially and will approach a task from unexpected angles (Kirton, 1976; 1987; 1989). An innovator has a high motivation for credit, However this may vary from culture to culture (Barnett 1953).

Compared with adaptors, innovators are more likely to identify themselves as sensation or change seekers (Goldsmith, 1984; 1986; Raju, 1980; Hirschman, 1980) and as great risk takers (Goldsmith, 1984, 1986). Innovators are found to be less dogmatic and more flexible than adaptors to have more tolerance for ambiguity, have less need for structure (Kirton, 1987). Innovators are more extroverted
than adaptors (Kirton, 1987) but unrelated to neuroticism or to social desirability (Kirton, 1987, Goldsmith and Matherly, 1986). Innovators possess greater self-esteem than adaptors (Goldsmith, 1985; Goldsmith and Matherly, 1986; Keller and Holland, 1978).

An innovator takes high professional risks by adopting new technology (Chapko's (1991). Innovators perceive internal time as passing more rapidly and process information at a deeper level than adaptors (Walling et.al 1987).

An innovator proliferates more innovative ideas, while the number of solutions offered may not be more in number compared to an adaptor (Venkatachalam (1978).

An innovator is less field dependent (Robertson et al.,1987), has more need for achievement, an extrovert and has theory-Y assumption about human beings (Thirunavukkarasu, 1987). The age of an innovator is found to be less compared to an non-innovator (Green et.al.1985; Baldridge and Burnham, 1975).

STUDIES ON CREATIVITY
The studies reviewed so far presents a portrayal of who an innovative person is. However, the studies are few in number and possibly all the features of the portrayal are not brought out by these studies. In this context it is profitable to turn our attention on studies on creativity.
It is true that creativity and innovativeness differ to some extent but resemblance is more.

Studies on creativity reveals certain qualities of a creative person. The important factors in creativity include, locus of control (Boleyn and Torrance, 1978), psychological femininity and masculinity (Barron and Harrington, 1981), Self-esteem (Dellas, 1978), dogmatism (Faschingbauer, Moore and Stone, 1978), and narcissism (Soloman, 1985).

After reviewing 15 years of research on personality characteristics of creative individuals, Barron and Harrington (1981) concluded:

"In general, a fairly stable set of core characteristics (e.g., high valuation of esthetic qualities in experience, broad interests attraction to complexity, high energy, independence of judgement, autonomy, intuition, self-confidence, ability to resolve or accommodate apparently opposite or conflicting traits in one's self concept, and finally, a firm sense of self as "creative") continued to emerge as correlates of creative achievement and activity in many domains." (p.453)

In a series of research on eminent architects, writers and other professional groups, MacKinnon (1962) found that the more creative individuals did not usually show better college grades than the less creative. Findings of Hudson (1966), Welsh (1975) have supported this notion.

MacKinnon (1969) description of the creative person - especially of the creative architect - on the California Psychological Inventory (Gough 1957) reads as follows:
A creative person is dominant (Do scale); possessed of those qualities and attributes which underlie and lead to the achievement of social status (Cs); poised, spontaneous, and self-confidence in personal and social interaction (Sp); though not of an especially sociable or participative temperament (low Sy); intelligent, outspoken, sharp-witted, demanding, aggressive, and self-centered; persuasive and verbally fluent, self-confident and self-assured (Sa); and relatively uninhibited in expressing his worries and complaints (low Wb).

A creative person is relatively free from conventional restraints and inhibitions (low So and Sc), not preoccupied with the impression which he makes on others and thus perhaps capable of great independence and autonomy (low Gi), and relatively ready to recognize and admit self-views that are unusual and unconventional (low Cm).

A creative person is strongly motivated to achieve in situations in which independence in thought and action are called for (Ai). But, unlike his less creative colleagues, he is less inclined to strive for achievement in settings where conforming behaviour is expected or required (Ac). In efficiency and steadiness of intellectual effort (Ie), however, he does not differ from his fellow workers.

Finally, a creative person is definitely more psychologically minded (Py), more flexible (Fx), and possessed of more femininity of interests (Fe) than architects in general (Mackinnon, 1969, 200-201).

Creativity exhibits a curvilinear relationship to age (Lehman, 1953; Simonton, 1984). According to Martindale (1989), "In general a person's most creative work is done at a fairly early age, and this age of peak productivity varies from field to field. It is fairly early in lyric poetry, mathematics, physics and chemistry (ages 25-30) and somewhat later in psychology and the social sciences (ages 30-40). Only a few specialities, such as architecture and novel writing show peak performance at later ages (40-45)".
A large number of studies have shown that when asked to describe themselves, creative people pick adjectives such as confidence, ego-tistical, and self-confidence, ambitions, curious and enthusiastic (Gough, 1979; Harrington, 1975). Creative person demonstrate autonomy and independence (Nabi, 1979). Creative people are independent in thought and action (MacKinnon, 1964). Creative individuals valued qualities such as obedience, diligence, attentiveness and cooperation and did not appear to value highly impulsivity, desire for change and non-conformity (Williams et al 1977).

The studies presented so far has not pin-pointed that innovativeness as a personality characteristic does exist and it can be used as a predictor for identifying an innovator. This rise to the following research question.

Question 1. Will there be a significant difference between the principals of high and low innovative firms in their scores on Kirton Adaption-Innovation Inventory?

Assumption: Innovativeness being a personality trait, will be expected to influence the behaviour of the people who are the motive force behind the operations of the firm which belong to them. Personality leads to behaviour is an accepted paradigm. With this assumption the following hypothesis was framed.
Hypothesis 1. There will be a significant difference between the principals of high and low innovative firms in their scores on the Kirton Adaption-Innovation Inventory.

Question 2. Will there be a significant difference in age between the principals of high and low innovative firms?

Assumption: While selecting the plans of the building, the architects were requested to make available the plans of the building which in their opinion was the best. They were also told that they could give the plans of the building then under construction or just then finished. These plans were subjected to evaluation by the subject experts. The restriction thus introduced made it suitable to focus on the relationship between age and innovativeness. However, since the review of literature does not show any definite trend in this area a null-hypothesis has been formed as follows.

Hypothesis 2. There will not be any significant difference in the ages between the principals of high and low innovative firms.

So far we have seen the portrayal of an innovator and of a creative person. However, some of the personality variables which prima facie based on the foregoing review should appear to be related to innovativeness. They are (1) Self-confidence, (2) Interpersonal trust, (3) Internal-External locus of control and (4) Values. The objectives as mentioned
elsewhere was to evaluate whether these variables will also act as predictors of innovativeness. For realizing these objectives, a review of the literature on the personality variables mentioned above is made in order to gauge the meaning of these variables.

STUDIES ON SELF-CONFIDENCE

Studies on self-confidence as such are very rare to find. However, there are few studies available on self-concept and self-esteem. Self-concept in brief, refer to the conception of who and what one is. In this respect self-concept and self-confidence have every reason to be highly interrelated. Similarly, self-esteem is understood in the literature as the regard one has about one’s own self. In-a-way person with positive self-concept and high self-esteem may be regarded as having good self-confidence, since confidence is born out of the awareness of human activities. With this view, review on studies on self-concept and self-esteem are included here.

People with good self insight has better interpersonal perception and do not project their traits into others (Norman 1953). People with good self-concept are high school achievers and had better concept about their ability with comparable IQ score (Brookover, Paterson and Thomas 1962; Rosenberg 1965; Borislow, 1962; Dyson, 1967; O’Leary 1972).

People with high self-esteem measure high on divergent thinking (Jaquish and Ripple, 1981). Whiteside (1977) in a study found that highly creative females had lower self-
esteem than either men or less creative women. She also found that highly creative men had self-esteem scores similar to women of minimal creative ability. On the other hand, few studies, Williams, Poole, and Lett (1977); Wright, Fox, and Noope (1975) found that there were no significant difference between the self-esteem scores of high and low creative individuals.

In an extensive study on seventh graders, Brookover, Paterson and Thomas (1962) revealed that self-concept was significantly correlated with school achievement and high achievers had a higher self-concept of ability than low achievers with comparable IQ scores. Self-concept of ability for specific subjects differed from each other and from generalized self-concepts of ability. And self-concept of ability was positively correlated with the perceived image held by significant others (parents, teachers and peers).

In a study among fourth grade students, Felker and Treffinger (1971) that high self-concept students scored significantly higher than low self-concept students on self evaluation of creative abilities and verbal fluency, flexibility, and originality. Creative individuals possesses self-confidence to a greater extent than less creative individuals (Nabi 1979).

Individual with low-esteem individuals have the tendency to be less acceptance of others and have lower regard for others (Wylie 1961). A positive self-esteemed individuals has less
need to manipulate others in order to protect himself and herself.

High self-esteemed individuals were more likely to be emotionally well adjusted and to have a higher status among their peers (Williams and Cole, 1968). People with high self-esteem manifest social power in interpersonal relationship - they are much likely to influence others - while those with low self-esteem are likely to be influenced by others (Gergen, 1971).

The review on self-concept and self-esteem presented so far show that the individuals with good self-concept and self-esteem have many desirable psychological qualities which prima-facie would be present in an innovative personality. It is obvious to think that a person who have high self-concept and good self-esteem will also have high self-confidence. A consideration of self-confidence will automatically take care of self-concept and self-esteem. With this in view the following research question are raised.

Question 3. Will there be a significant difference between the principals of high and low innovative firms in their scores on the Self-Confidence Scale?

Assumption: Self Confident person has been defined as one who perceive himself as socially competent, emotionally mature, intellectually adequate and in general having positive and constructive self-feeling and evaluation. The
principals of the high innovative firms could be expected to have this essential profile in their personality. Moreover, the self-confidence is part and parcel of innovativeness in which the principals of the high innovative firms will measure high. Based on these assumptions the following hypothesis has been framed.

Hypothesis 3. There will be a significant difference between the principals of high and low innovative firms in their scores on the Self-confidence scale.

LOCUS OF CONTROL
The construct of locus of control describes the degree to which person believes that reinforcements are contingent upon their own behaviour. Some individuals with extremely fatalistic outlooks (i.e. externality) may not believe that there is anything they can do which will effect the happenings in their lives. Given externality an individual might anticipate seeing high risk behaviour (what is there to lose ?), easy succumbing in the face of barriers (why bother? There's nothing I can do about it) or simply apathy (what will happen will happen, so why should I get worked up ?). On the contrary, persons with an internal locus of control are more apt to persist in the face of barriers (There must be something I can do). Because they consider themselves as capable of effecting their outcomes and they will strive to make those outcomes to turn out in the way they would wish them to be (Rotter, 1966, 1975; and Lefcourt, 1984).
Studies by Rotter and his colleagues suggest that skill versus chance environments differentially affect behaviour (Rotter et al., 1961). A number of studies have been conducted in recent years to test the attribution-theory-locus-of-control model in work settings. One study found that internally controlled employees are generally more satisfied with their jobs, are more likely to be in managerial positions, and are more satisfied with a participatory management style than employees who perceive external control (Terence et al., 1975). Other studies have found that internally controlled managers are better performers (Anderson et al., 1978), are more considerate of subordinates (Pryer and Distenfano, 1971), and not to burn out (Glogow, 1986), and follow a more strategic style of executive action (Miller et al., 1982).

Several researchers have examined the relationship between locus of control and creativity (Bolen and Tarrance, 1978; Yardley and Bolen, 1980; Aggarwal and Verma, 1977; Cohen and Oden, 1974; Ducette, Wolk and Freidman, 1972; Bamber, Jose and Boice, 1975; Glover and Sautter, 1976). Yardley and Bolen (1980) explored the relationship of non-verbal creative abilities to Locus of Control, Sex, and Race among 112 second-grade public school students in North Carolina. The results revealed that external females scored highest of all groups on fluency and flexibility, and were significantly higher than external males. The author also suggested that creative males were internal while creative females tend to
be external in orientation. Aggarwal and Verma (1977) in their study compared high creative and low creative school students from India on locus of control. The results revealed that high-creative students were significantly more internal than the low creative students.

Internal subjects prefer intermediate risk while external subjects prefer extreme risk depending upon the nature of the task. On a dice throwing task internals prefer intermediate areas of risk and compared to externals they tend to avoid extremely difficult levels of betting (Liverant and Scodel, 1960).

A few studies have related confidence and persistence to locus of control. Rotter and Mulry (1965) and Feather (1967, 1968) found no significant differences in this variable for internal and external subjects. Feather conducted several detailed studies on confidence, analysing not only initial statements of confidence, but also changes in confidence over time or experience at a task. The only contradictory evidence can be offered are the findings of Lao (1970), who utilized subjects from 10 Negro Colleges. In that study the major instrument for assessing locus of control, the Internal-External Locus of Control scale, was factor analyzed and reduced to three main factors, one of which was the personal control 'the degree to which an individual feels he has control over what happens to him'. The data indicated that both confidence in finishing college and obtaining
higher grades were positively related to personal contract.

A study examined correlation among scores on the Kirton Adaption-Innovation Inventory, the Tiffany Control Scales and the Speilberger State-Anxiety Inventory for 104 undergraduate at Middle-sized Mid Western University. Analysis indicated that adaptors and innovators perceive control from and/or over aspects of their lives differently. Innovators feel control over internal (self) and over external (environment), while adopters feel control from internal (self) and from external (environment). The results suggest innovators generally feel that they are in control of both themselves and the environment. Adopters generally feel they are controlled by internal drives and impulses or environmental events (Elder, 1989).

A few studies indicate that the external locus of control subject is lacking insight, self-confidence, and social approval and that internals have a tendency to assume control, while externals take on a more passive role (Joe, 1971; Debolt, et al., 1973). It has been shown that the locus of control of subjects affects the quality and quantity of their performance on tasks depending on whether the task is perceived as skilled-determined or chance-determined (Cohen, 1960; Liverant and Scodel, 1960). Internal locus of control subjects working individually perform better on open-ended or ambiguous tasks and utilize information-processing strategies better than external locus of control subjects.
The above reviews leads to the following research question.

Question 4. Will there be a significant difference between the principals of high and low innovative firms in their scores on the three dimensions of the Internal-External Locus of Control Inventory viz., Internality, Powerful others and Chance?

Assumption: Rotter (1966) theorized that internals perceive outcomes to be contingent on their own action and externals on luck, chance, fate or powerful others. For an internal person self-congratulation and self-blame provide the focus. Whereas for externals neither success nor failure is a matter of personal glory. The principal of an innovative firm cannot leave things to chance or fate. He takes responsibility for progress and the sense of progress is just enough for him to provide incentive. What is progress for him need not be certified by others. So, with these assumption the following hypotheses were framed.

Hypothesis 4. The principals of high innovative firms will score higher than the principals of low innovative firms on the internal scale of the Internal-External Locus of Control Inventory.

Hypothesis 5. The principals of high innovative firms will not score higher than the principals of low innovative firms
Hypothesis 6. The principals of high innovative firms will not score higher than the principals of low innovative firms on the powerful-others scale of the Internal-External Locus of Control Inventory.

STUDIES ON VALUES

As has been stated elsewhere, the concept 'values' has been analyzed and defined in various ways, differently from other concepts and relating to the broad context of social science. Many useful discussion about the nature of values and value system were made by sociological and social-psychological authors (e.g. Albert, 1968; Allport, Vernon and Lindzey, 1960; Kluckhohn, 1951; Kluckhohn and Strodbeck, 1961; Kohlberg, 1969; Kohn, 1969; Morris, 1956; Parson, 1968; Rokeach, 1973; Scheibe, 1970; Scott, 1965; Smith, 1969, 1978; Williams, 1968, 1971).

Values were seen as the result of traditional ideas transmitted historically, and were reflected as the essential core of culture (Kroeber and Kluckhohn, 1952). Values were variously defined as the unconscious canons of choice (Benedict, 1934), cultural themes (Opler, 1945), the unconscious system of meaning (Sapir, 1949), a world view (Redfield, 1953) and the central core of meaning (Kluckhohn, 1956).
A value has also been defined as an enduring belief that a specific mode of conduct (instrumental value) or end-state of existence (terminal value) is personally or socially preferable to other modes of conduct or end-states of existence (Rokeach 1968; 1973). Like attitudes, values have cognitive, effective and behavioral components. Antecedents of human values are traceable to the socialization process as it occurs in various cultures and societies (Rokeach 1973). Values represent an important conceptual link between the social structure and personality (Bengston and Lovejoy, 1973).

Values are central in the organization of personality to the extent that they are constituents of the self. Personal values as the result of complex transactions between the individual and the environment, thus reopening the issue of the relationship between inter-individual and intra-individual measures of values (Smith, 1969).

Values have been found to be related to various personality types (Allport and Vernon, 1931); dogmatism (Troldahl and Powell, 1965); authoritarianism, ethocentrism, Machiavellianism (Feather, 1971; Rim 1970); interpersonal conflict among university students, n-Achievement, n-Affiliation, n-Power, religious background and political identification (Rokeach 1968 - 69).

Values have also found to be useful in describing society's collective consciousness (Durkheim, 1960), differentiating
social structures (Tonnies, 1957); determining social conduct (Blau, 1964) and various aspects of social behaviour (Rokeach, 1968 - 69).

Research in the field of organizational behavior has shown that values influence corporate decision on strategy (Guth and Tagiuri, 1965); cause many of the 'people problems' within organizations (McMurry, 1963); differentiate between organizations (Clare and Stanford 1979) and between managers and non-managers (Munson and Posner 1980); and satisfaction with a group (Drake, 1973).

A study on marketers have found that age group differences in value exist between innovative and other firms in their marketing strategies (Engel and Blackwell, 1982). This notion was supported by few authors (Antonucci et al., 1979; Morris and Small, 1971; Hoge, 1976; Penn 1977; Christensen, 1977).

A study comparing values of Burmese and American university students found that the expressed desire to become an important person was much more common among students from emergent nations than among students of industrially developed countries (Glicksman and Wahl, 1965).

For high level employees, work is seen as a means of self-actualization (Friedmann and Havighurst, 1954), as a way of finding a life role and as a means of implementing one's self-concept (Super, 1951). Higher level employees care more self-actualization values like advancement, recognition, and
independence, whereas lower level employees care more for salary, fringe benefits and happiness (Armstrong, 1971; Regan, Rokeach and Grube, 1982).

In a study on the work values of managers and workers, Damodar Suar (1992) found that managers put more emphasis on intrinsic values, and care more for non-materialistic values like, altruism, aesthetic, creativity, intellectual stimulation, independence, prestige, management, variety of jobs and perspective way of life than the workers. On the other hand workers put more emphasis on extrinsic work values than the managers. Workers care more for a job than the managers in which pay is adequate, employment is certain and work is done in a pleasant environment.

The above review lead to the following research question.

Question 5. Will there be a significant difference between the principals of high and low innovative firms in their scores on the theoretical-value of the Study of Values Scale?

Assumption: Values guide behaviour. They are manifested in personal goals, ideas, convictions, interest and other individual traits. The theoretical value under consideration expresses itself in intellectual pursuits and in discovering the truth. A theoretical person doesn't care for the utility of objects, whereas he is interested in observing them. In an innovative firm, every activity is having a focus on utility. So, with this view it is reasonable to assume that
an innovative person will not be more theoretical than a less-innovative person.

Hypothesis 7. The principals of high innovative firms will not score higher than the principals of low innovative firm on the theoretical value of the Study of Values Scale.

Question 6. Will there be a significant difference between the principals of high and low innovative firms in their scores on the economic-value of the Study of Values Scale?

Assumption: The economic man is interested in useful commodities and their production and marketing. In a sense it is an activity of accumulation of wealth. At the higher level this urge for accumulation of wealth springs out of a comparison of the accumulations of others. We can say that motive for accumulation comes from without, whereas for an innovator the motive to innovate comes from within. From this perspective, these two variables seem to have no reason to be related. Whereas, from the point of view of an element of risk present in both the activities, one can expect a relationship too. With these assumptions a null hypothesis has been formulated.

Hypothesis 8. Will the principals of high innovative firms score higher that the principals of low innovative firms in the Social-value of the Study of Values Scale?
Question 7. Will there be a significant difference between the principals of high and low innovative firms in their scores on the Aesthetic-value of the Study of Value Scale?

Assumption: An aesthetic man is interested in artistic episodes of life. Each single experience is taken as a whole and aesthetically evaluated and enjoyed. It is likely that in an architectural innovation, the innovator may take an aesthetic slant in his design. In that case an association is feasible. But this need not be the case everywhere. Because of these varied possibilities it has been decided to have a null hypothesis.

Hypothesis 9. There will be no significant difference between the principals of high and low innovative firms in their scores on the Aesthetic-value of the Study of Value Scale.

Question 8. Will there be a significant difference between the principals of high and low innovative firms score in their scores on the Social value of the Study of Value Scale?

Assumption: The social man is oriented towards human-being. He is altruistic and philanthropic in his dispensation. The fellow human-being is an end in himself for a social man. Innovator is a loner. He doesn't make efforts to carry convictions with others. Innovativeness dries up in the faces of opposition rather than struggling to thrive. An
innovator doesn't judge his product on borrowed criteria. Because of these divergence, we can expect that there will not be any relation between the social values and innovativeness.

Hypothesis 10. The principals of high innovative firms will not score higher than the principals of low innovative firms in their scores on the social value of the Study of Values Scale.

Question 9: Will there be a significant difference between the principals of high and low innovative firms in their scores on the religious-value of the study of values scale?

Assumption: The religious man is one who comprehend the cosmos as the single unity and relates himself with it. So he is not interested in worldly matters. He is mystical and derive satisfaction out of it. An innovative person is interested in problems and their solutions. Any challenging situation is attractive to him, whereas a religious man is detached and is not earthly. Innovator is down to earth, in the sense that he questions the assumptions underlying the problems. From this point of view there is no ground for any relationship between innovativeness and religious values. A question arises then about the necessity for formulating a hypothesis here. However, the studies reported elsewhere have
Hypothesis 11. The principals of high innovative firms will not score higher than the principals of low innovative firms on the Religious value of the Study of Values Scale.

Question 10. Will there be a significant difference between the principals of high and low innovative firms in their scores on the political-value of the Study of Values scale?

Assumption: Political man is primarily interested in power and there are several philosophers who hold that power was the most fundamental and universal motive. If this is true then we cannot expect any relationship between innovativeness and political values.

Hypothesis 12. There will be no significant difference between the principals of high and low innovative firms in their scores on the political-value of the Study of Values Scale.

STUDIES ON INTERPERSONAL TRUST

People who believe everything everyone says may be considered gullible, but people who are suspicious of all communication from others will only be perceived as cynical or paranoid. Rotter (1967) has developed a paper and pencil test to
illustrate the tendency of people to believe the communication of strangers. He refers to this generalized tendency as interpersonal trust. Furthermore, people scoring high on the scale of interpersonal trust are more cooperative in response to the non-contingent promises of another, but only when the promiser also possesses the capability of using threats and punishments against them (Monteverde, Paschke and Tedeschi, 1974; Schlemker, Helm, Tedeschi 1973).

Kelly and Stahelski (1970) and Deutsch (1960) report that high authoritarians and those basically competitively oriented tend not to cooperate and trust others.

According to Driscall, Davis, Lipetz (1972), trust evolves through mutually satisfying interactions and by increasing confidence in relationship. Larzelere and Huston (1980) found that trust between partners was associated with love and with intimacy because of self-disclosure.

Pruitt (1965) has suggested that the more control one party has over the other, the more the former will trust the latter. Deutsch (1973) has indicated that a trusting disposition may arise from such irrational factors as despair, innocence, impulsive and faith. He also stated that a helpful and rewarding person or group usually will be liked and well be perceived as liking the perceiver as well as being trustworthy.
High trustees emerge as independent and trustworthy, (Rotter, 1971): honest (Steinke, 1975) and open to seek psychological help (Fisher and Turner, 1970).

Persons having higher levels of need for social approval tend to respond in a more trusting fashion (Crowne & Marlowe, 1964). Male externals are found to be more likely than internals to report that they do not trust that the verbal promises of others can be relied on (Hamsher et al, 1968).

Alice (1985) reported from a study that there is a low but significant correlation between the coordinators confidence and trust in staff and coordinators overall effectiveness. Jane (1986) concluded from a study on perception of organizational climate and trust of staff that there is a positive moderate correlation between perception of organizational climate of the staff members and their trust towards the other staff members.

The individuals who are having high interpersonal trust performs well in their job than those having low interpersonal trust (Elaine (1986).

According to Kelly (1967, 1971, 1972, 1973), if a person's action are consistent overtime and in various situations, he will be assumed to possess the disposition reflected by his actions and if the number of witnesses have observed the person's consistent truthfulness and share their observations, a consensus will be formed that he is credible and trustworthy.
Few researchers state that the trust is essential to organizational effectiveness (Boss, 1978; Zand, 1972; Golembiewski and McConkie, 1975). According to them, subjects under conditions of high trust are significantly more effective in problem solving than low trust situations. They also added that the degree to which people trust one another determines the degree to which they will communicate honestly, share relevant information, try to control others, and permit others to influence their behaviour and decisions.

**Question 11**: Will there be a significant difference between the principals of high and low innovative firms in their scores on Interpersonal Trust Scale?

**Assumption**: The principals of the high innovative firms are deemed to be innovative in their personality traits. Because of this they may have a totally different approach to organizational life. Innovative people are said to be loners; neither they are loathsome about it. In this perspective there may not be any special reason holding innovativeness and interpersonal relations together. But there is another side to the issue. The principals are not only innovators but also implementors. So to carry out their projects they had to have smooth interpersonal relations with fellow workers in the firm. For this practical reason they could learn in no time that reposing trust in others is a facility rather than a strategy. So, it could be expected that the principals of high innovative firms will score high
on interpersonal trust scale than the principals of low innovative firms. With these assumption the following hypothesis was formed.

Hypothesis 13: There will be a significant difference between the principals of high and low innovative firms in their scores on Interpersonal Trust Scale.

ORGANIZATIONAL SIZE AND INNOVATION

The structural correlates of innovativeness include the size (the resources), complexity and the authority structure (Loveless and Bozeman, 1983). Larger organizations are found to be more innovative (Baldrige and Burnham, 1975; Corwin, 1975; Moch and Morse, 1977; Hage and Aiken, 1967; Mohr, 1969; Mansfield, 1963; Kuluzny et al., 1974; Blau and McKinley, 1979; Aiken and Hage, 1971; Bingham, 1975; Natnanson and Morlock, 1980; Gabriel, 1984; Bantel, 1987; Mowery, 1988) with few exceptions (Myers and Marquis, 1969; Aiken et al., 1980; Corwin, 1972; Downs, 1976).

Size tends to co-vary with a number of variables (complexity, wealth, age, growth, and organizational slack), making the relationship between size and innovativeness difficult to determine. A supposition by several theorists (e.g. Mohr, 1969) is that size is primarily a facilitative factor rather than a necessary determinant for innovation.
Galbrith (1956) suggests that larger organizations are more innovative simply because they bear the cost; they have more 'slack' resources. Empirical studies have provided some support for this theory (i.e., Perry and Kraemer, 1980; Bingham, 1975; Mohr, 1969). Some studies (Lambright, 1979; Eveland et al., 1970) of innovation have found that resources availability was not a key to eventual adoption. Instead, extra resources simply speeded up the innovation process.

However, some studies suggest that innovation come from small firms than industrial giants (Charpie, 1970; Freeman, 1977). Schooler (1970) reported mixed findings on organizational size and innovations. He conjectured that there is a size threshold to further innovations, and he added that organizational size is probably not as important as how an organization is arranged in regard to technological development.

Pavitt (1970) concluded that large firms having multi-disciplinary research laboratories are critical for the general innovative capacity of a nation. In addition, the research capacities of large firms may contribute to the fact that small firms appear to be more innovative, because many small innovative firms are 'comprised of individuals who apply and exploit the technology and something the market knowledge they have learned in the big firms' (pavitt, 1970: 101).
Organizational size has been found to have ambiguous effects, but findings may be partly due to problems of measurement (Kimberely, 1978). Size as measured by extent of organizational resources is generally held to increase the likelihood of early adoption. Carroll (1967), Kuluzny et al (1974), Mytinger (1968) observed this relationship empirically. Mohr (1969) found no relationship between size and early adoption, and Utterback (1974) concluded from a review of the literature that 'there is no evident relationship between firm size and speed of adoption or innovations'.

Question 12. Will there be a significant difference between the high and low innovative firms in their size?

Assumption: Mixed findings were reported by different authors on the relationship between size and innovation. Galbrith (1956), Pavitt (1970), Moch and Morse (1977), Perry and Kraemer, Mohr (1979) suggest that size of an organization facilitate innovation and few other studies, Lambright (1979), Charpie (1970), Freeman (1977), report innovations come from small firms rather than industrial giants. Schooler (1970) reported mixed findings on organizational size and innovations. Under the circumstances a null-hypothesis has been framed.

Hypothesis 14. There will be no significant difference between the high and low innovative firms in their size.
ORGANIZATIONAL STRUCTURE AND INNOVATION

The basic theme of the literature on structure and innovation is that the more 'organic' the organization is, the more the chance for it to be better able to adapt to environmental change through innovation. An organic organization is characterized by (1). high horizontal complexity (the number of sub-units or task specialization in the organization), (2). low vertical differentiation (flat hierarchy/few layers of authority), (3). low formalization (few written rules), and (4) decentralized decision making (Burns and Stalker, 1961).

An organization's propensity to develop through innovation is also associated with a number of internal features. For instance, the professionalization of staff correlates positively with the rate of new program development in sample of social-welfare agencies (Hage and Aiken, 1967) of school (Hage and Aiken, 1970) and of scientist (Venkatachalam and Saleendran, 1990). Rate of innovation relates positively to decentralization of decision making and authority in samples of schools (Cillie, 1940), medical research institutes (Ben-David, 1962), welfare agencies (Khandawalla, 1972). Rate of innovation correlates positively with low degree of internal organizational stratification in medical research institutes (Ben-David, 1962) and in business firms (Ronken and Lawrence, 1952).

One cluster of studies (Aiken and Hage, 1971; Burns and Stalker, 1961; Crozier, 1964; Gordon et al., 1974; Hage and
Aiken, 1967; Palumbo, 1969; Rosner, 1968) found that formalization and centralization reduce the probabilities of early adoption; whereas receptivity to innovation is highest in the organic form of organization in which there is minimum procedural specification, minimum routinization of behaviour, and widespread internal communication. However, another cluster of studies' (Corwin, 1972; Evan and Black, 1967; Wilson, 1966) observed positive relationship between formalization and centralization and organizational adoption. The studies also reported that innovation are more easily imposed on formalized organizations.

Rosner's (1968) study of formalization and changeability was conducted in 24 Chicago area hospitals. formalization was measured by activity control, defined as the degree to which a hospital specified procedures for the medical staff. Changeability was the frequency with which new drugs were tried by the medical staff. The standardized partial regression coefficient between these two variables was in the negative direction, but not significant.

In a study of the Teachers Corps program indicated that the rules-and-procedures orientation of class room teachers, measured by twelve Likert items had virtually no relationship with the number and innovativeness of new technologies introduced into the schools Corwin's (1972).

Increased horizontal complexity provides a diversity of expertise, leading in turn to identification of a wide range
of problems and innovations (Aiken et al. 1980), a cross-fertilization of ideas (Aiken and Hage, 1971), constructive conflict (Lawrence and Lorsh, 1967; Thompson, 1965), and a diversity of incentives/goals (Wilson, 1966; Zald and Denton, 1963). The clear majority of studies have confirmed the relationship between innovativeness and horizontal complexity (e.g., Burns and Stalker, 1961; Gordon et al., 1974; Baldridge and Burnham, 1975; Moch and Morse, 1977; Cohn and Turyn, 1980; Hage, 1980), though occasionally studies fail to conform the relationship (Aiken et al., 1980).

A large number of vertical layer of authority and centralized decision making are generally thought to impede innovation. The more people who must approve an innovative idea, the less chance it will have of reaching the top (Dunning and Sincoff, 1980). And decentralized authority is thought to give people more of a stake in the adaptability and continued strength of the organization. Findings on this relationship have been mixed. Some studies (i.e., Hage and Aiken, 1967; Burns and Stalker, 1961; Cohn and Turyn, 1980) find a decentralized structure conducive to innovation, but other studies (i.e., Normann, 1971; Corwin, 1972) find that a centralized structure leads to innovation, and still others (Bingham, 1975) have found no relationship. And also analysing case studies of product development, Norman (1971) found that all fundamental changes in products occur within firms that have strongly centralized power, and that small modifications of old products occur without centralized power.
Decentralization may enhance early adaptiveness, since local decision makers react to environmental changes without waiting for decisions by their superiors (Hage, 1965; Price, 1968).

Organization structure which facilitate innovation are characterized by communication systems with the following attributes (Peters and Waterman, 1982): Informality, extraordinary intensity; physical support (blackboard, conference rooms for lunch meetings; stationery for use, dining discussion and demonstration; display devices and so on); forcing devices/mechanisms; that is various forms and modes of encouraging innovative elan; tight controls provided by open and frequent discussion about how things are going; and scant formal documentation such as reports, memos, records and compliance with procedures.

Question 13. Will there be a significant difference between the high and low innovative firms in their structural complexity?

Assumption: The structural variables of an organization such as complexity, centralization and formalization are related to innovation or program change (Aiken and Hage, 1971; Corwin, 1972; Gordon et al. 1972). Complexity can be conceptualized both in terms of how differentiated the structure is and how numerous are the tasks that refer to different kinds of operation and activities. Few studies
(Burn and Stalker, 1961) state that an 'organic organization' (high horizontal complexity, low vertical differentiation) will be better able to adapt to environmental change through innovation. On the other hand, few studies state that complex organization is likely to be more innovative than a less complex one (Wilson, 1966; Aiken and Hage, 1968; Baldridge and Burham, 1975; Moch and Morse, 1977). Since these studies have produced results which are not conclusive, appropriate null hypothesis has been framed.

**Hypothesis 15.** There will be no significant difference between the high and low innovative firms in their structural complexity.

**Hypothesis 16.** There will be no significant difference between the high and low innovative firms in the number of divisions responsible for primary activities of design and production.

**Hypothesis 17.** There will be no significant difference between the high and low innovative firms in the number of the additional staff engaged in supportive activities.

**Hypothesis 18.** There will be no significant difference between the high and low innovative firms in their task diversity.
Hypothesis 19. There will be no significant difference between the high and low innovative firms on their written personal rules.

WORK-CULTURE - A specific dimensional view of organizational culture

Culture as a system of shared meaning among members of organization (Robinson, 1989) brings to ones memory the success story of McDonald. McDonald has more than 10,000 restaurants all over the world. The layout the menu and the taste are much the same everywhere. Every McDonald's employee knows the company's basic operating principle relating to quality, service and cleanliness. The culture of this organization came from Ray Kroc, the founder principal of the organization. A legacy has been created by Ray Kroc on the above three parameters. Even after the death of Ray Kroc, the legacy has been perpetuated in the form of video tapes for the present day executive to refer whenever he has to typically ask himself, "what would Ray do?" Because of this arrangement, the present executive decisions are consistent with the decision to Ray Kroc made when he headed the company. This explains to a large degree why McDonald has become a symbol of stability and consistency.

According to Robinson (1989), "the founders of an organization traditionally have a major impact in establishing the early culture. They have a vision or mission of what the organization should be. They are unconstrained
by previous customs or ideologies. The small size that typically characterizes any new organization further facilitates the founders' imposing their vision on all organizational members. Because the founders have the original idea, they also typically have biases on how to get the idea fulfilled. The organization's future results from the interaction between (a) the founders' biases and assumptions, and (b) what the original members who the founders initially employ learn subsequently from their own experiences (Schein, 1983).".

According to Peter and Waterman Jr (1982), the culture of an organization is defined as 'shared values' or 'major beliefs'. According to them, the shared values or major beliefs are reflected in the dominant use of anecdotes, myths, stories, slogans and legends by personnel of 'excellent' companies in their description of the characteristics of their firms. They also added that the cultures of 'excellent' companies differing across product, location and sizes are seen to be quite similar, but serve to provide the people with a sense of meaning, autonomy, accomplishment and security.

Wilkins (1984) view that symbols, words, gesture, pictures or objects carry a particular meaning within a culture. The images or pictures of heroes, alive or dead, real or imaginary, who possessed characteristics of highly prized in the culture are served as models for behaviour.
Pettigrew (1979) argued that an entrepreneur finds an organization to put his personal stamp on the cultural components of the organization by creating an initial culture and then find followers fitting into that culture. Many studies Blau and McKinley, 1979; Dibble, 1973; Lodahl and Gordon, 1972; Meyer and Rowan, 1977, Pettigrew 1973, have suggested that patterns of beliefs and values associated with professional and other elite occupations have pervasive effects on organizational functioning.

Ohmae, (1982) in his book on Japanese culture state that Japanese society has engendered an outstanding culture of productivity. Japanese organization rely heavily on the capabilities and potential of their members (employees) for improvement, productivity and innovation. Employees are recognized to be valuable human resources and their creative productive capacity is utilized to the fullest extent through participative methods like suggestion boxes, quality circles and value analysis - engineering contests.

If an organization fail to incorporate the ideologies and values of occupational groups, they run the risk that members of these groups will make public denunciations based on their expertise and thus undermine the legitimacy of the organization and it's leadership.

Organizational culture is often captured in slogans that indicate degree of emphasis in areas such as research,
production or marketing. French et al (1985) gives few examples.

Continental insurance: "You'll never outgrow us"
Delta Airlines: "The Delta family feelings"
Digital Equipment: "We change the way people work"
General Electric: "Progress is our most important product"
W.R. Grace: "One step ahead of a changing world"

Question 14. Will there be a significant difference between the high and low innovative firms on the different work-cultures prevailing in the firms.

Assumption: Culture gives people their view of reality and it includes what they know and how they express it, as well as their values and standards of behaviour (Tannenbaum, 1977). Work culture in the present context refers to the aim, idea, objective or the goal of the organization shared by the members of the organization, and innovation of any firm depends on these factors. Number of work was done on these area (Child, 1972; Pondy and Boje, 1975; Meyer and Rowan, 1977; Blau and McKinley, 1979; Holzner, 1968) and since the results were not conclusive, a null hypothesis has been formulated.

Hypothesis 20. There will be no significant difference between the cultures of high and low innovative firms.
Contingency theorists have emphasized the distinction between an organization and its environment (Burns and Stalker, 1961; Khandwalla, 1972; Lawrence and Lorsch, 1967; Shortill, 1973; Thompson, 1967). They have generally argued that since, as a living system, an organization is dependent on the environment for survival (Katz and Kahn, 1966), variations in the environment's properties must necessitate corresponding variations in an organization's properties.

Studies of the influence of organizational environment on adoption of innovation are rare, although assertions exist that the environment makes a difference are not (Feller and Menzel, 1977; Nelson and Winter, 1975; 1977). There is some convergence around the notion that more complex (Heydebrand, 1973) or heterogeneous (Baldridge and Burnham, 1975) environments encourage adoption of innovation as an organizational strategy for coping with the uncertainty that accompanies unpredictability.

Aldrich (1979) suggested that environmental pressures, as well as internal constraints, lead organizations to retain specific structures and processes. Pressures from competitors, from members, and from citizens, work towards the retention of current structures in business, voluntary and public organizations. In addition, ideologies and folk wisdom shared across organizations lead to the adoption of similar forms of structure or process, and make them resistant to change.
Alderfer (1976) proposed that optimal boundaries promote mutual exchanges: people on both sides of the boundaries receive as well as give. This suggests that a design team should seek a balance between protecting itself from outside influences and opening itself to outside influences. An established design team with a distinct identity and stable boundaries can tolerate more outside influence than can a new team (Brown, 1980).

Sometimes an organization notices that the external environment is changing and that the organization must also change, if it is to survive. Baldfridge (1971) described how, for over a century, New York University had provided educational opportunities for all types of people in New York. During the 1950's, as the public educational sector expanded, the university realized that its traditional student base would be threatened. In the early 1960's, enrollments dropped off, and the University prepared to change its image and to become a highly selective, uniquely urban center for full-time learning. Appropriate rules and procedures were implemented to make sure that these changes occurred, so that by the 1970s, New York University was a very different institution than the one that had existed in the 1950's.

Blau and McKinley (1979) in their study on American Architectural firms, examined the influence of environment on organizational innovation. The results revealed that there was a little relationship between environment and innovation.
Aiken and Hage (1968) examined the structural correlates of the number of joint programs entered into by sixteen American welfare and health organizations. They found that those organizations having many joint programs tended to be staffed with more specialists, who engaged in more professional activities. They were more innovative, had more active internal communications and somewhat more decentralized patterns of decision making.

Question 15. Will there be a significant difference between the high and low innovative firms in their environmental complexity?

Assumption: An organization depends on its environment for resources and support like, suppliers, consumers, competitors, labour markets, scientific or technical reference groups and other relevant units. Few studies (Baldridge, 1971; Netting, 1972) suggest that the organization must innovate for its survival. The organizational performance and innovation depends on how compatible and structural complexity are (Lawrence and Lorsch, 1967; Scolt, 1977), and few studies, Freeman (1973), Pennings (1975) do not support this. Due to these mixed findings a null hypothesis has been formulated.

Hypothesis 21. There will be no significant difference between the high and low innovative firms in their environmental complexity.
Question 16: Will there be a significant correlation between the scores of KAI and the scores of Self-confidence, Locus of control, Values and Interpersonal trust?

Assumption: The personality variables under the present study are basic personality traits. These traits would be reasonably expected to result in the context of decision making in the area of change. The expression of these traits in behaviour may be tempered by the KAI style. This assumption posits relationship between KAI scores and scores on these personality variables like Self-confidence, Locus of control, Interpersonal trust and Values. With this view the following hypothesis is framed.

Hypothesis 22: The scores of KAI and the scores of Self-confidence, Locus of control, Values and Interpersonal trust will be positively and significantly correlated.

Question 17: Whether the personality variables under consideration will effectively discriminate a high innovator from a low innovator?

Assumption: Many critical characteristics of an innovator and of an adaptor were described by Kirton (1976; 1987; 1989), Goldmith (1985; 1989); Rogers and Shoemaker (1972). It is reasonable to assume from the theory and findings of these authors that certain personality characteristics will effectively discriminate a high innovative individual from a
low innovative individual. With this assumption, the following hypothesis was framed.

Hypothesis 23: The scores of KAI, Self-confidence, Locus of control, Values and Interpersonal trust will effectively discriminate a high innovator from a low innovator.