In the present study an attempt is made to find out the differences between the high and low innovative firms in the field of civil engineering along certain psychological, organizational and environmental variables. Review of literature was done with special reference to such studies which utilizes the definition of innovation - "an ideas, practice or object perceived as new by an individual (Rogers and Shoemaker, 1977). Extensive review of literature relating psychological correlates of an innovator has been carried out by many others (eg. Rogers and Shoemaker, 1972; Kirton, 1989; Goldsmith, 1989). Similarly, significant conclusion relating innovation with organizational size, structure, formalization, environment and work culture were also reviewed (eg. Burns and Stalker, 1961; Gordon, et al. 1974; Aiken and Hage, 1980). However, there are not many studies relating innovativeness with few other psychological correlates like, self-confidence, interpersonal trust, locus of control, and values. Hence, the present study was planned with the following objectives.

1. To find the differences between the principals of high and low innovative firms engaged in construction of residential buildings on certain psychological variables like Kirton Adaption-Innovation personality, Self-confidence, Internal-External Locus of Control and
Values (Theoretical, Economic, Aesthetic, Social, Political and Religious)

2. To find out the differences between the high and low innovative firms in respect of organizational, environmental and work culture variables.

3. To find out those personality variables which effectively discriminate the high innovative principals from those of low innovative principals.

Instruments selected for the study

The following instruments were used:

1. Kirton Adaption-Innovation Inventory (Kirton, 1976 as adopted by Venkatachalam, 1978)

2. The Internal-External Locus of Control Inventory (Venkatapathy, 1984)

3. The Interpersonal Trust Scale (Christopher, 1980)

4. The Self-confidence Inventory (Basavanna, 1975)

5. The Study of Values (Allport, Vernon, and Lindzey, 1960)

Hypotheses

A synoptic presentation of the hypotheses are:

1. There will be a significant difference between the principals of high and low innovative firms on age, and scores on Kirton Adaption-Innovation Inventory,
Inter-Personal Trust Scale, Internal-External Locus of Control, Self-confidence Inventory and Study of Values Scale.

2. There will be no significant difference between the high and low innovative firms in their size, structural differentiation, number of division responsible for primary activities of design and production, additional staff engaged in supportive activities, task-diversity, written personal rules and environmental complexity.

3. There will be no significant difference between the work cultures of the high and low innovative firms.

Pilot Study
A pilot study was conducted on a sample of 30 principals of firms engaged in the construction of residential buildings. The purpose of the pilot study was to find out the suitability of the procedures relating to

a. administration of the instruments
b. whether the instruments were capable of eliciting the responses from the subjects; whether they had any difficulty in following the procedure
c. To estimate the time required for each test
d. Whether the instruments were able to bring out personal experiences of the respondents wherever required

e. To find out the face validity of the various instrument and to workout the speman's split-half reliability co-efficient

f. Analysing the results involving computerization for the purpose of using the computer at a later stage

The responses of the thirty principals were coded and suitable statistical analysis were carried out to find out the modification required. The results showed that no serious modification were required.

MAIN STUDY

Sample
The sample for the study consisted of 160 principals heading their own firms engaged in the construction of residential buildings, situated in Coimbatore and its neighbourhood and who had registered their firms either in Coimbatore Builders Association or in Coimbatore Architectural Association. The membership registration ledgers of the associations were used as the population. There were as many as 300 registered firms out of which only 160 principals of the firms cooperated in the study.
Administration

The Kirton Adaption-Innovation Inventory, Interpersonal Trust Sale, Self-confidence Inventory, Internal-External Locus of Control and Study of Values Scales were individually administered to the Ss included in sample selected for the study. The instruments contained instruction which were self-explanatory. After administering the inventories, using an interview schedule information on work culture, size of the firm, structure, formalization and environmental complexity were elicited.

Construction of the high innovative and the low innovative firms

The principals of the firms selected for the study were requested to provide the best blue print (in their opinion) of a residential building which they might tender in the event of entering a competition for an architectural award.

Five faculty members in the department of civil engineering of a local well known engineering college were requested to provide areas of innovation in the context of residential building construction after they were explained in detail about what constitutes an innovation. Two other faculty members then were asked to rate any building (blue print) as high innovative architecture, if they have at least one innovation in any of the areas provided by the five faculty members. The coincidence of rating by the two faculty members provided the basis for any firm to be labelled as
high innovative or not. 51 building plans turned to be high innovative and 109 plans as low innovative.

Statistical Analysis
The data obtained with the research instruments from the Ss included in the main study were scored and tabulated. The main thrust of the data analysis was to test the hypotheses relating to the differences possible in the scores on various instruments. Co-efficient of correlation, analysis of variance, discriminant analysis and cluster analysis were computed.

Conclusions
a. The principals who scored high on Kirton Adaption-Innovation Inventory are found to be heading high innovative firms.

b. The principals of the high innovative firms exhibit more interpersonal trust than the principals of the low innovative firms.

c. The principals of the high innovative firms show more self-confidence than the principals of the low innovative firms.

d. The principals of the high innovative firms are more internally oriented than the principals of the low innovative firms.
The principals of the low innovative firms show more belief in chance than the principals of the high innovative firms.

The principals of the low innovative firms perceive that their lives and their outcomes of their activities are subjected to powerful others.

The scores on Kirton Adaption-Innovation personality, Self-confidence, Interpersonal Trust, Internal Locus of Control and Economic values discriminates well a principal heading a high innovative from that of a principal heading a low innovative firm.

The Kirton Adaption-Innovation Inventory scores positively and significantly correlate with Self-confidence, Interpersonal Trust, Aesthetic value and Social value and negatively and significantly correlate with religious value and Chance locus of control.

The larger the size of the firms, the more it is innovative.

Diversification and innovativeness are positively related.

The Low innovative firms have more complex structures than the high innovative firms.

The Low innovative firms have more written rules and regulations (more formal) than high innovative firms.
The "innovative and creative", "service", and "responsible" work-cultures discriminate an high innovative firm from that of a less innovative firm cultures.

RECOMMENDATIONS

Human Resource Development

1. Since, the scores of KAI, Self-confidence and Internal Locus of Control measures discriminate effectively a high innovator from that of a low innovator, the use of these measures in selection is recommended.

2. It will be useful to think in the line of a comprehensive instrument incorporating the themes of 'KAI', 'Interpersonal trust', 'Self-confidence' and 'internal orientation' for identifying the innovative personality in specific Human Resource Development endeavors.

3. Based on the findings of others and that of the author, he feels confident in recommending the use of KAI as adapted by Venkatachalam (1978) for measuring innovativeness in Indian conditions.

4. However, not withstanding the above since the cognitive styles of the innovator and that of the adaptor as measured by KAI represent the two
different approaches to problem-solving and since both of them are meritorious in their own way it will be very much useful to make the appropriate choice in the matter of Human Resource Development.

Structure and Diversification

1. For the firms which desire to be innovative, it is recommended that organizing an organic organization with a low vertical structure will promote innovation.

2. Similarly, a well diversified organization holds better promise for innovation. In the light of this findings it is suggested that as much as possible the work need to be diversified to maximize innovativeness.

Work culture

Work culture is found to be playing an important role in nurturing innovation. Hence it is recommended that suitable work culture which will vary from industry to industry need to be designed for augmenting innovation.