CHAPTER - IV

RESEARCH DESIGN
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CHAPTER - IV
RESEARCH DESIGN

4.1. INTRODUCTION :

In this chapter, the statement of problem, title of the study, objectives of the study, assumptions, Research strategy, details of research tools, population and data collection are explained.

4.2 STATEMENT OF PROBLEM :

Peter Drucker considers the universities, colleges, hospitals etc. as non-profit institutions in today's society of institutions. The performance of these non-profit institutions have a telling effect on the performance of other institutions like industry, business, government and defense. These educational institutions have to tide over various interactive forces exerted by internal culture and its environment. The information revolution, globalization of economy, free movement of population and culture, the radical transformation of trades and professions have re-shaped the frame work within which the educational function is carried out.

The resources available to education are more limited. This must be managed and used with extensive care. Also educational institutions must make use of fast changing technological innovations, particularly in the field of telecommunications and computer technology and integrate them in the educational process. In order to face a volatile society, educational institutions must be flexible to change. Colleges must not only adopt to changes but they must manage to see it coming. Given the circumstances, an educational enterprise will find the leaders needed to face changes and even provoke it.

So the research study has been titled appropriately by to the problems faced by educational system in general and technical education in particular.
4.3 THE TITLE OF STUDY:

The title for investigation is ‘Leadership behaviour of Polytechnic Principals in Tamil Nadu’.

4.4 OBJECTIVES:

1) To identify the various dimensions of leadership behaviour of Polytechnic Principals.
2) To conduct a factor analytical study on identifying the Leadership components of polytechnic principals.
3) To cull out the underlying constructs of the leadership behaviour of the factor analytical model.
4) To find out the leadership behaviour of polytechnic principals.

4.5. POPULATION:

The population for this study was defined as the Principals of Polytechnics in Tamil Nadu. There were 120 Polytechnics, in total, consisting of 25 Government Polytechnics, 25 Government Aided Polytechnics and 70 Self financing Polytechnics. Questionnaires were sent to all Principals. There was no sampling technique followed.

4.6. Rate of Response:

The research faced slow rate of response, on first despatch of the research tool, only 30 responses were received. A second request for response was despatched and for that another 25 responses were collected. Then through personal persuasion another 25 responses were received at the third attempt. A total of 80 responses have been received, the return rate being 66%. They were subjected to factor analysis.
4.7. ASSUMPTIONS:

The following assumptions are made for the purpose of this study.

- A high level of knowledge competence among principals.
- A high level of action competence among principals.
- A lot of role change activities among principals.
- A lot of planning and strategical activities among the principals.
- A lot of people development activities among principals.
- A lot of team building activities among principals.

4.8. Definition of Technical Terms:

Following are the definitions of key technical terms used in research.

**Leadership Behaviour:**

It is a catalytic agent that produces changes in totality in a given situation.

**Principals:**

The heads of Polytechnic Institutions.

**Polytechnic:**

Institutions that prepare the students for the award of Diploma in Engineering and Technology.

**Non-profit Institutions:**

Schools, Colleges, Churches, Hospitals that produce a change in human being. (Peter Drucker 1993)
Organising:

The process of engaging two or more people in working together in a structured way to achieve a specific goal or set of goals.

4.9. DEVELOPMENT OF TOOLS:

The tools available for studying leadership behaviour is based mostly on Ohio state study which mainly concentrates on the style of leadership behaviour.

In the recent past, the management studies have developed well and a number of literature with new theories, new concepts have sprung forth. So it was decided to construct a new tool for the leadership behaviour.

For the construction of tool, the surveys on education research was gone through, then a number of studies on management, organisational behaviour, educational psychology, sociology, social psychology, philosophy and political science were scanned for new concepts, definitions and dimensions. Theories of leadership were also referred. The tool was formed on three facets of leadership namely personal, performance and people. The personal dimension has 15 variables, the performance dimension has 8 variables and people dimension has 3 variables with a total of 163 statements. These statements were accommodated in a 5 point scale. The items were graded as most suitable, more suitable, suitable, least suitable and unsuitable.
CONCEPTUAL ANALYSIS OF TOOL DEVELOPMENT:
A Model Leadership Behaviour:

4.9.1. Introduction:

In order to study the leadership behaviour of polytechnic principals in TamilNadu, a new tool was developed based on various concepts, on was three facets of Leadership Viz. Personal, Performance and People. Leadership is considered to have six elements (Arthasatra and Thirukural). In modern terms, they are: people, counsel, resource, support, strategy and security.

4.9.2. Personal Dimension:

As a leader one is visible, incredibly visible and has expectations to fulfill. Most organizations need somebody who can lead regardless of the weather. What matters is that he or she works on the basic competencies. Leaders need objectivity, a certain detachment. They subordinate themselves to the task, but don't identify themselves with the task. The task remains both bigger than and different from them. Any leader requires two competencies - knowledge competency and action competency (Velu.R).

A leader requires certain qualities in order to have the knowledge and action competencies. The knowledge qualities are willingness to listen, memorizing, wisdom, discriminating valid and invalid statements, adherence to truth, fearlessness, swift in observation and understanding facial expression. The action qualities are courage, persistence, fast acting, expertise, compassion, alertness, energy, physical agility, consistency, friendliness, honesty, eloquence, forgetlessness, situational understanding, refrain from misdeed, virtuous enterprise, approachable, pleasing speech, gracious look, equity in justice, amenable to bitter counsel. (Velu.R)
"Courage, compassion, wisdom, energy(zeal) are the natural qualities of a leader. Alertness, expertise and bravery are the action qualities of a leader ".

(Kural 382 & 383)

Peter Drucker asserts that a leader requires three basic competencies. The first such basic competence is the willingness, ability and self discipline to listen. The next important competence is not to alibi oneself. The last basic competence is the willingness to realize how unimportant one is compared to the task (Peter Drucker 1995).

A. Knowledge Competence :

Thirukural enumerates various knowledge competencies in various couplets. The knowledge competences are: the willingness to listen, discrimination of valid and invalid statements, swift in observation, comprehension of facial expression and anticipation of crisis.

The leader discerns the reality from what is listened from various people (Kural 423). The leader speaks out thoughts in clear trends to comprehend the subtle senses of others (Kural 424). The leader senses the mood of surroundings with a deep look at it, Understanding the insight of the people from their gestures.(Kural 701 & 702)

"Who knows the sign, and reads unuttered thought, the gem is Of earth round traversed by the changeless sea ". (Kural 701).
The most important task of an organization's leader is to anticipate crisis, perhaps not to avoid it, but to overcome it. One has to make the organization capable of anticipating the storm, weathering it and in-fact being ahead of it. That is called innovation, constant renewal. (Peter Drucker 1995).

"Who fails to guard himself from flaw
Loses his life like flame lit, straw ". (Kural 435)

These were the cause and base for the statements under the variable "Knowledge competence".

B. Action Competence:

1. Initiation:

   Leadership is the initiation of acts which result in a constant pattern of group interaction directed towards the solution of a mutual problem. (Hemphill.J.K.)

   The first job of the leader is to think through and define the mission of the institution. A mission statement has to be operational. Otherwise it is just good intentions. Then the task is to convert the organization's mission statement into specifics. For successful mission, look at the strength and on the performance-look outside for the opportunities, the needs (Peter Drucker 1995). There are three things needed- Opportunities, competencies and commitment. Every mission statement has to reflect all the three. Or it will fall down from its ultimate goal, its ultimate purpose and final test and will not mobilize the human resources of the organization for getting the right things done.

   "Accomplishment, the hindrances, large profit won
   By effort; these compare - then let the work be done". (Kural 676)
A leader has to carry out certain analysis before undertaking any venture and they are emphasized in various Thirukural couplets:

"Expenditure, return and profit of the deed
In time to come: weigh these - then to the act proceed" (Kural 461)

"Tis ruin 'if man do an unbeciting thing;
Fit things to leave undone will equal ruin bring ” (Kural 466)

These were the cause and base for the statements under the variable “Initiation”.

2. Environment and Political affiliation:

The leaders are more concerned with the concept of power than the power over. They are concerned with how the power of leadership can help people to become more successful- to accomplish the things that are important - to experience a greater sense of efficiency. They are less concerned with what people are doing and more concerned with what they are accomplishing. (Smith John 1989)

Differences that weakens the bond between two persons will bring the ruin to the complete system asserts Thiruvalluvar in the Chapter86 of Thirukural.

"With plans not well matured to rise against your foe,
Is way to plant him out where he is sure to grow” (Kural 465)

The hallmark of the truly effective leader is that he does not feel threatened by strength, but the leader should understand the power structure of the system to know what powerful people want or do not want. (Peter Drucker 1995)
"Treasure and Instrument and time and deed and place of act; These five, till every doubt remove, think over with care exact;" (Kural 675)

"Can any work be hard in very fact, If men use fitting means in timely act" (Kural 483)

"The pendent world's dominion's may won, In fitting time and place by action done." (Kural 484)

These were the causes and bases for the statements under the variable “Environment and Political affiliation”.

3. Problem Solving:

The same problem may demand various approaches and solutions under varying circumstances.

The problem solving has the following phases:

- Defining the problem
- Analyzing the problem
- Developing alternative solutions
- Deciding upon the best solution
- Converting the decision into effective action
- Implementing and verifying the decisions.

These were the causes and bases for the statements under the variable “Problem solving”.
4. Resource and support mobilization:

No task can be accomplished without resources and support. They are in various forms: 1) Human resource 2) Finance and 3) Material. The mobilization is to be carried out both internally and externally. The importance of resource and support mobilization is emphasized in various Kurals.

"Who owns no principal, can have no gain of usury;
Who lacks support of friends, knows no stability" (Kural 449)

Careful allocation of resource is also a type of resource mobilization asserts Thiruvalluvar

"With knowledge of the measure due, as virtue bids you, give
That is the way to guard your wealth and seemly live" (Kural 477)

"Incoming may be scant; but yet no failure there,
If in expenditure you rightly learn to spare" (Kural 478)

These are the causes and bases for the statements under the variable "Resource and Support mobilization".

5. Challenge facing and stress tolerance:

A leader accomplishes success only against the challenges as the work is done against the forces. Then only the power is generated. If a leader concentrates on results rather than on the challenges, stress is developed in him.

Stress agitates the mind. More the stress, more will be the agitation. Agitated mind makes the brain inefficient. Only when the mind is calm, can the brain function efficiently, that is intelligently. So under all trying circumstances the leader must remain calm and take decisions.
“What men call ‘power in action’ known for ‘power of mind’;  
Extreme to man all other aids you find” (Kural 661)

“The power in act of men renowned and great  
With king acceptance finds and fame through all the stab” (Kural 665)

“’Each hindrance shun’ unyielding onward press, if obstacle be there  
There two define your way, so those that search out truth declare (Kural 662)

“Though toil and trouble face thee, firm resolve hold fast  
And do the deeds that pleasure yield at last” (Kural 669)

These are the causes and bases for the statements under the variable “Challenge facing and stress tolerance”.

6. Decision making:

Decision making occurs as a reaction to a problem where there is a discrepancy between some current state of affairs and some desired state. Decision making is the consideration of alternative course of action. The awareness that a problem exists and that a decision needs to be made is a perceptual issue for the leader. Every decision requires interpretation and evaluation of information. Data typically received from multiple sources, needs to be screened, processed and interpreted. The perception of the decision maker will answer the question what data is relevant and what is not. Alternatives will be developed and the strengths and weakness of each will need to be evaluated again. The individual decision maker’s perceptual process will have a large bearing on the final outcome.

A leader’s decision making involves balancing the decision.

These are the causes and bases for the statements under the variable “Decision making”.

7. Task accomplishment and win:

One of the aspects that differentiates the leader from others is the way he achieves the task. The leader gets the task accomplished with win-win feeling whereas 'others' get the task completed. The accomplishment requires-taking responsibility and involvement of all concerned.

An effective non-profit executive owes it to the organization to have a competent staff wherever performance is needed. To allow non-performers to stay on means letting down both the organization and the cause. Only two way relationships work. An effective non-profit executive start building this two way relationship with the staff, with the board, with the community, with donors with volunteers and with alumni. The true test of a relationship is not that it can solve problems but that it can function despite problems (Peter Drucker 1995).

Hence springs the statement under the variable “Task accomplishment and win”.

8. To be Innovative:

The leaders have to grow with success. If the market grows, one has to grow with it or one becomes marginal, sooner or later, the growth slows down and the Institution plateaus. Then it has to have the ability to maintain its momentum, its flexibility, its vitality and its vision, otherwise it becomes frozen.

Non-profit organizations need the discipline of organized abandonment. They need to face up to critical choices. The starting point is to recognize that change is not a threat-it is an opportunity; organize oneself for systematic innovation, build the search for opportunities inside and outside, into the organization. Look for changes as indication - an opportunity for innovation. To build all these into the system, the leader has to set the example (Peter Drucker 1995).

These were the causes and base for the statements under the variable “To be innovative”.
9. Selecting Counsel:

Leadership has a value component and to maintain and add value, a good counsel is essential for a leader.

(Regardless of how personally ethical an employee is or how much attention management pays to developing an ethical code for the organization, if the organization's top leaders act unethically, they implicitly encourage their employees to do the same. The opposite is also true. Leaders who exhibit high ethical standards become role model for others in the organization and raise its overall level of ethical behavior).

It is an organization's top leadership that sets the ethical tone through both their words and their actions - though what they do is probably more important than what they say - an organization's leaders convey what is acceptable and unacceptable behavior. If leaders, for example, use company resources for their personal benefit, inflate their expense accounts, give favored treatment to friends or employ similar practices, they imply that such behaviour is acceptable for all employees.

"As friends the men who virtue know, and riper wisdom share, Their worth weighed well, the king should choose with care" (Kural 441)

"Cherish the all-accomplishment men as friends, Whose skill the present ill removes, from coming ill defends" (Kural 442)

"What power can work his fall, who faithful ministers Employs, that thunder out reproaches when he errs" (Kural 447)

These are the causes and base for the statements under the variable "Selecting counsel".
10. Human relation to realize potential:

Human being has got high potential energy and when it is realized properly, higher goals can be achieved. People determine the performance capacity of an organization. No organization can do better than the people it has. An effective non-profit manager must try to get more out of the people, he or she has. The yield from the human resource really determines the organization's performance. If the leader wants to realize the potential of the people in the organization, he has to use their strength - not emphasize their weaknesses. By the time people come to work, their personalities are set. One can expect adults to develop manners and behaviour and to learn skill and knowledge. But one has to use people's personalities the way they are, not the way the leader would like them to be.

There are four things required to convert the potential of an individual into performance. They are:

- a mentor to guide him or her
- a teacher to develop skills
- a judge to evaluate the progress and finalize
- an encourager to cheer up

A leader has to be a personal integrator of the above.

"When the leader is impartial, and maintains in equity, He can reap of rich harvest from the human resource" (Kural 111).

"When the leader speaks with smile and sterling sense, He gains everything from the people" (Kural 97).
A leader should not take a narrow and short sighted view of the people's progress (Peter Drucker 1995). A wise leader speaks none but the words of deep significance.

"The wise, who weigh the worth of every utterance
Speak none but words of deep significance" (Kural 198)

The leader listens patiently what others say before judging individuals for their act of commission and omission. Even when he wants to discipline somebody, he has to do it in such a way that the punished do not feel for it. (Kural 562)

These were the causes and bases for the statements under the variable "Human relation to realize potential".

11. Effective Communication:

Effective Communication means not simply conveying the information from one to another. The information conveyed must carry with it all the meaning-tonal, emotional, expressional, timely urgency - the total essence of intended impact. In fact, researches indicate that poor communication is the most frequently cited source of interpersonal conflict. (Thomas and Schmit 1976)

Communication serves four major functions within a group or organization - control, motivation, emotional expression and information. (Scolt W.G and Mitchell TR 1976)

A communication will be an effective one only when it creates action, not reaction - these are emphasized in the following kurals.
"Since gain and loss in life on speech depend
From careless slip in speech thyself defend"  (Kural 642)

"Speak words adapted well to various hearer's state;
No higher virtue lives, no gain more surely greater"  (Kural 644)

"Speak out your speech, when once it is past dispute
That none can utter speech that shall your speech refute."  (Kural 645)

These were the causes and bases for the statements under the variable “Effective communication”.

c. The role change to suit the task/situation:

Every task and every situation warrant a specific type of role by the leader because every task and situation has its own problems. Even success has the problem. The problems of success have ruined more organizations than have failure, partly because if things go wrong, everybody knows they have to work whereas success creates its own euphoria; one outruns his resources. And some one retires on the job, which may be the most difficult thing to fight. There are four approaches to identify leaders style of influencing the followers depending on the task/situation. They are

- Management grid approach
- Hersey and Blanchard's life cycle or situational approach
- Liket's four system of management.
- V-room – Yelton normative leadership model.

These were the causes and bases for the statement under the variable “The role change to suit the task/situation”.
D. Leader Role - The Role to fit expectation:

In order to be effective, the role of the leader has to fit in with the mission of the Institutions and its values. Every one plays roles - as parents, as teachers and as leaders. To work, the role has to fit in three dimensions. First the role has to fit the person - who he is, second the role has to fit the task and finally, the role has to fit the expectations.

The leader has two things to build:

1) on the quality of the people in the organization and
2) the new demand he makes on them.

So it is the job of the leaders to set high standards on one condition that they be performance focussed. (Peter Drucker 1995)

These were the cause and base for the statements under the variable “The role to fit the expectation”.

E. Self development:

Self development means both acquiring more capacity and also more weight as a person altogether. The self development is neither a philosophy nor good intentions. It is action. In self development not only one becomes a bigger person but also a more effective and committed person. In all human affairs there is a constant relationship between the performance and achievement of the leaders, the record setters and the rest. The leaders set the vision and the standard. The critical factor for achieving success is accountability-holding himself accountable.
The leaders who work most effectively never say 'I'. And that is not because they have trained themselves not to say 'I'; they don't think 'I' they think 'We'; they think 'team'. They understand their job to make the team function. They accept responsibility and don't side step it, but 'We' gets the credit. (Peter Drucker 1995)

One should lift one self up by one's own efforts and should not degrade one self; for one's own self is one's friend, and one's own self is one's enemy (Bhagavad Gita 6.5). The first priority of the executives own development is to strive for excellence. Self development is very deeply rooted with the mission of the organization, with the commitment and the belief that the work done in this church or this school matters. Leader cannot allow lack of resource, of money, of people and of time to overwhelm him and become the excuse for shady work. The leader can only make himself effective - not any one else. His first responsibility to the organization for which he works is to make sure he gets the most of himself for himself. He can work only with what he has.

Creating a record of performance is the only thing that will encourage people to trust the leader and support him. It is the leader's job and responsibility to talk to those on whom he depends and who depend on him, to find out in a systematic way, what helps, what hinders and what needs to be changed.

These were the causes and bases for the statements under the variable "Self development".

4.9.3 PERFORMANCE DIMENSION :

A) Planning for performance:

The performance in the non-profit institutions must be planned and this starts out with mission. A school / college principal has to satisfy teachers the managing board, parents, the students themselves and the society. Five
constituencies, each of which sees the school differently. Each of them is essential and each has its own objectives. Each of them has to be satisfied at least to the point where they don't fire the principal, go on strike or rebel.

The first task of the principal is to get all of these constituencies to agree on what the long term goals of the institution are. Building around the long term is the only way to integrate all their interests.

Unless one integrates the vision of all constituencies into the long range goal, the leader will soon loose support, credibility and respect. The successful non-profit executives start out by defining the fundamental changes that institutions want to make in society and in human beings; then they project that goal onto the concern of each of the institution's constituencies.

This kind of planning is quite different from what business people usually mean by the term. To formulate the plan successfully, the leader thinks through the concerns of each of the institution's constituencies. Integrating constituency goals into the institution's mission is almost an architectural process.

So the leader keeps the long range objectives of the mission in mind while planning short range efforts and prioritizes the tasks before starting various efforts.

These were the causes and bases for the statements under the variable “Planning for Performance”.

B. Strategies to convert plan into action:

Strategies convert the plan into results. They convert what one wants into accomplishments. First non-profit institution needs marketing strategy. It must be designed into the system. The non-profit institutions need fund development strategy. Fund development is creating a constituency which supports the organization because it deserves it. It means developing a membership that participates through giving.
Next non-profit organization requires a win strategy to work systematically on the productivity in an institution. The first factor is always people. It is not a matter of working harder; it is a matter of working smarter and above all of placing people where they can really produce. The second universal factor is money and the third factor is time. (Peter Drucker 1995.)

"Let King first ask, who shall the deed perform' and what the deed of hour befitting both assured, let every work proceed" (Kural 516)

Next one needs an innovative strategy—a way to bring the new to the market place. There are two strategies—innovative growth strategy and innovative competitive strategy.

These were the causes and bases for statements under the variable. 1. Marketing and fund development, 2. Win strategy, 3. Innovative growth strategy, 4. Innovative competitive strategy.

C. Adherence to the basic rules:

In any organization, feuding and bickering will destroy the spirit of the organization. The feuding and bickering are not the aspect of personality conflict, but they are symptoms of the need for change in the organization. Next the discourtesy is not to be tolerated because manners are the social lubricating oil that smoothes over friction. Courtesy is needed to enable different people who don't necessarily like each other to work together.

Organizations are based on trust. Trust means that one knows what to expect of people. Besides, the organization must be built on information and communication. Every one must take responsibility for information. For each person to take responsibility for his or her own contribution, a standard is required and it should be understood by every body.

These were the causes and bases for the statements under the variable “Adherence to the basic rule's".
D. Effective Decision:

In every move, in every decision, in every policy the non-profit institution needs to start out by asking - will this advance the capacity to carry out the mission - it should start with the end result - should focus outside - in, rather than inside - out.

The effective decision makes to concentrate on important decisions. The most important part of the effective decision is to ask - what is the decision really about - whether the decision will advance the organization capacity to carry out the mission.

There were the causes and bases for the statements under the variable “Effective decision”.

E. PRODUCTIVE WORK:

Any Institution performs by making human resource productive. It accomplishes its performance through work. Personal satisfaction of the worker without productive work is failure; but so the productive work that destroys the worker’s achievement. The first step towards making the worker achieving is to make work productive. Making work productive requires four separate activities, each having its own characteristics and demand.


These were the causes and bases for the statements under the variable “Productive work”.

4.9.4. PEOPLE DIMENSION:

A. People Decision:

People decisions are the ultimate perhaps the only control of an organization. People determine the performance capacity of an organization, no organization can do better than the people it has. The yield from the human resources really determines the organizations’ performance. And that is decided by the basic
people decisions. Who is hired and whom is fired; where one places people and who is promoted.

The quality of these human decisions largely determine whether the organization is being run seriously. Whether its mission, its value and its objectives are real and meaningful to people rather than just public relations and rhetoric. (Peter Drucker 1993)

The rules for making good people decisions are well established. Any executive who starts out by believing that he or she is a good judge of people is going to end up making the worst decisions. Those who are good at people decisions start out with a very simple premise: that they are not judges of people. They start out with a commitment to a diagnostic process. An executive has to learn not to depend on insight and knowledge of people but on a mundane, boring and conscientious step-by-step process (Peter Drucker 1993). Because according to Thiruvaluvar, it will be rare to see a man free from unwisdom when closely scanned, even though he is deeply learned and unflecked by fault. (Kural 503). So the selection process starts with an assignment. Kural asserts,

"Even when tests of every kind are multiplied,
Fully many a man proves otherwise, by action tried" (Kural 514)

"Of greatness and of meanness too
The deeds of each are touchstone true" (Kural 505)

"Trust no man whom you have not fully tried,
When tested, in his prudence proved confide" (Kural 509)

B. People Development:

People development is essential for the better performance of the organization. If the executive wants people to perform in an organisation, he has to use their strengths not emphasize their weaknesses. By the time people come to work, their personalities are set. One can expect adults to develop manners and behaviour
and to learn skills and knowledge. But one has to use people’s personalities the way they are, not the way we would like them to be. (Peter Drucker 1993) The Thirukkural emphasizes the same in the following couplets.

“Weigh well the good of each, his failings closely scan,  
As these or those prevail, so estimate the man” (Kural 504)

“Who good and evil scanning, ever makes the good his joy;  
Such man of virtuous mood should king employ”(Kural 511)

The executive should not take a narrow and short sighted view of the development of people. One has to learn specific skills for a specific job. But development is more than that: it has to be for a career and for a life. The Specific job must fit into this long term goal. Look always at performance, not at promise. Thiruvalluvar emphasizes three things: 1.assign the job to the performer only. 2.allot the proper work to the proper man and 3. Once work is assigned, empower him.

“No specious favourite should the king’s commission bear,  
But he that knows, and work performs with patient care” (Kural 515)

“Let king first ask, ‘who shall the deed perform? And ‘what the deed?  
Of hour befitting hour assured, let every work proceed” (Kural 516)

“This man, this work shall thus work out, let thoughtful king command;  
Then leave the matter wholly in his servant’s hand” (Kural 517)

“As each man’s special aptitude is known,  
Bid each man make that special work his own” (Kural 518)

These were the causes and bases for the statements under the variable “People decision and people development”.

C. Building the team:

Organizations use teams and task forces for specific missions. The effective leaders like to turn their staffs into teams. Teams are created to pool the talent, energy and initiative of several persons so that this group of persons can achieve what may be difficult for individuals to achieve alone. (Khandewella.N)

To build a successful team, one starts out with the job, not with people. A common mistake is to believe that because individuals are all on the same team, they all think alike and act like. Not so. The purpose of the team is to make the strengths of each person effective and his or her weaknesses irrelevant. The focus is to look at the performance and strengths of individuals combined in a joint effort. (Peter Drucker 1993)

These were the causes and bases for the statements under the variable "Building the team".

BRIEF:

The above synthesis emphasises the veracity of the statement listed in the questionnaire tool. The questionnaires were formatted in the function oriented style so that the respondent's view will be an action oriented response which will be a straight real behavioural depiction. Because behaviour involves all types of activities performed by an individual in any state or condition, it is the total response which a man makes to a situation. (DANDEKAR W.N. 1981)

4.10. Abstract of the Tool:

The tool is constructed on three facets of Leadership Viz. Personal, Performance and People. The number of statements under each dimension is given in the table.
### Table No: 4.1 Abstract of the Tool

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<th>Leadership facet</th>
<th>Name of Variable</th>
<th>No of statements</th>
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<tr>
<td><strong>Personal facet</strong></td>
<td>Knowledge competence</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Action competence</td>
<td>89</td>
</tr>
<tr>
<td>1.</td>
<td>Initiation</td>
<td>5</td>
</tr>
<tr>
<td>2.</td>
<td>Environmental and political affiliation</td>
<td>6</td>
</tr>
<tr>
<td>3.</td>
<td>Problem solving</td>
<td>5</td>
</tr>
<tr>
<td>4.</td>
<td>Resource and support mobilization</td>
<td>4</td>
</tr>
<tr>
<td>5.</td>
<td>Challenge facing and stress tolerance</td>
<td>9</td>
</tr>
<tr>
<td>6.</td>
<td>Decision making</td>
<td>5</td>
</tr>
<tr>
<td>7.</td>
<td>Task accomplishment and win</td>
<td>8</td>
</tr>
<tr>
<td>8.</td>
<td>To be innovative</td>
<td>5</td>
</tr>
<tr>
<td>9.</td>
<td>Selecting counsel</td>
<td>3</td>
</tr>
<tr>
<td>10.</td>
<td>Human relation to realise potential</td>
<td>14</td>
</tr>
<tr>
<td>11.</td>
<td>Effective communication</td>
<td>3</td>
</tr>
<tr>
<td>12.</td>
<td>The role change to suit situation/task</td>
<td>12</td>
</tr>
<tr>
<td>13.</td>
<td>The role to fit the expectant</td>
<td>4</td>
</tr>
<tr>
<td>14.</td>
<td>Self development</td>
<td>6</td>
</tr>
<tr>
<td><strong>Performance facet</strong></td>
<td>Planning for performance</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Strategies to convert the plan into a action</td>
<td>22</td>
</tr>
<tr>
<td>1.</td>
<td>Marketing and fund development</td>
<td>5</td>
</tr>
<tr>
<td>2.</td>
<td>Win strategy</td>
<td>8</td>
</tr>
<tr>
<td>3.</td>
<td>Innovative growth strategy</td>
<td>6</td>
</tr>
<tr>
<td>4.</td>
<td>Innovative competitive strategy</td>
<td>3</td>
</tr>
<tr>
<td>c.</td>
<td>Adherence to the basic rules</td>
<td>6</td>
</tr>
<tr>
<td>d.</td>
<td>Effective decision</td>
<td>7</td>
</tr>
<tr>
<td>e.</td>
<td>Productive work</td>
<td>7</td>
</tr>
<tr>
<td><strong>People facet</strong></td>
<td>People decision</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>People development</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Building the team</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Total 163 statements were developed for the research tool</td>
<td>163</td>
</tr>
</tbody>
</table>
Some of the sample statements are given below

<table>
<thead>
<tr>
<th>Most suitable</th>
<th>More suitable</th>
<th>Suitable</th>
<th>Less suitable</th>
<th>Unsuitable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. The Principal listens patiently to what others say discerning the reality

2. The Principal weighs well the good-bad, gain-loss efforts before initiating action.

3. The Principal brings order even to the most messy work situation through systematic analysis

Responses of the principals were subjected to factor analysis.

### 4.1.1 Application of factor analysis:

Several theories of intelligence have been based on the application of factor analysis. Important among these theories are Spearman's two factor theory, Thurstone's theory of primary mental abilities, Guilford's structure of intellect model, Cottell's theory of fluid and crystallized intelligence and Vernon's hierarchical theory.

Another important area in which factor analysis has been used is the development of test. In this aspect factor analysis helps in deciding the factor structure of the items in a test and also in giving the name to the concept to be measured by the test. Factor analysis has also been found to be useful in the search for primary interests, attitudes and temperaments traits.

Factor analysis is applied for data reduction when the investigator wants to reduce his variable to a smaller set by essentially decomposing the original
variables into a new subset of (hypothetical variables composed of linear combinations of parts of the variance of the original variables. (Anderson 1963)

Factor analysis can be used to combine and scale several measures of uni-domain (such as extroversion or neuroticism or verbal fluency) so as to reduce maximum discrimination among individuals along a single dimension (Takenchi, Yanai and Mukherja 1982)

Factor analysis reveals the maximum number of independent dimensions that are required to define adequately the domain under investigation.

4.12. FACTOR ANALYSIS:

The essential purpose of factor analysis is to describe, if possible, the co-variance relationships among many variables in terms of a few underlying but unobservable random quantities called factors.

In the area of psychological testing, the purpose of factor analysis is to find a set of salient factors that will account for the major part of the variance of a set or group of scores on different tests.

Suppose variables can be grouped by their correlations, that is, all variables within a particular group are highly correlated among themselves but have relatively small correlations with variables in a different groups it is conceivable that each group of variables represents a single underlying construct or factor, that is responsible for the observed correlations.
All procedures for factor analysis require the same basic kind of data for the purpose i.e. for correlational matrix. There are a few procedures which can also use the matrix of co-variance. The main methods of factor analysis are

- Principal component method
- Principal axes method
- Summation method
- Centroid method.

4.13. Principal Component:

Principal Components are linear combinations of random or statistical variables which have special properties in terms of variables. For example the first principal component is the normalized linear combination (that is the sum of squares of the co-efficients being one) with maximum variance. In effect, transforming the original vector variable to the factor of principal components, amounts to a rotation of co-ordinate axes to a new co-ordinate system that has inherent statistical properties.

The principal components turn out to be the characteristic vectors of the covariance matrix. Then the study of principal components can be considered as putting into statistical terms the usual developments of characteristic roots and vectors (for positive semi definite matrices).

From the point of view of statistical theory the set of principal components yields a convenient set of co-ordinates and the accompanying variances of the components characterize their statistical properties. In statistical practice the method of Principal Component is used to find the linear combinations with large variance. In many exploratory studies the number of variables under consideration is too large to handle. Since it is the deviations in these studies which
are of interest, a way of reducing the number of variables to be treated is to discard the linear combinations which have small variances and study only those with large variances.

The Principal Components give a new set of linearly combined measurements.

Principal Components depend solely on the covariance matrix \( \Sigma \) (or the correlation matrix \( \rho \)) of \( X_1, X_2, \ldots, X_p \)

Principal Component \[ z_1 = \frac{x_1 - \mu_1}{\sqrt{\sigma_{11}}} \]

\[ z_2 = \frac{x_2 - \mu_2}{\sqrt{\sigma_{22}}} \]

\[ z_p = \frac{x_p - \mu_p}{\sqrt{\sigma_{pp}}} \]

In matrix rotation \( Z = (V)^{1/2} - 1 \sim (X - \mu) \)

14.14. Principal Component Solution of the factor model:

The Principal Component factor analysis of the sample covariance matrix \( S \) is specified in terms of its Eigen value with Eigen vector pairs \((\lambda_1, e_1), (\lambda_2, e_2), \ldots, (\lambda_p, e_p)\).

Let \( m < p \) be the number of common factor. The matrix of estimated factor loading \((1_{ii})\) is given by

\[ L = \begin{bmatrix} \lambda_1 e_1 & \lambda_2 e_2 & \cdots & \lambda_m e_m \end{bmatrix} \]
The estimated specific variances provided by the elements of the matrix

\[ \Lambda = \begin{pmatrix} \psi_1 & 0 & \cdots & 0 \\ 0 & \psi_2 & \cdots & 0 \\ \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & \cdots & \psi_k \end{pmatrix} \]

with \( \psi_i = \sum_{j=1}^{m} l_{ij}^2 \) and \( l_{ij} = S_{ij} \).

Communalities are estimated as

\[ h_i^2 = \psi_i / \psi_1 \]

The principal component factor analysis of the sample correlation matrix is obtained by starting with \( R \) in place of \( S \).

**Arrays of Basic Descriptive Statistics**

Sample means \( \bar{X} = \begin{pmatrix} \bar{X}_1 \\ \bar{X}_2 \\ \vdots \\ \bar{X}_p \end{pmatrix} \)

Sample variance and Co variance \( S_n = \begin{pmatrix} S_{11} & S_{12} & \cdots & S_{1p} \\ S_{21} & S_{22} & \cdots & S_{2p} \\ \vdots & \vdots & \ddots & \vdots \\ S_{p1} & S_{p2} & \cdots & S_{pp} \end{pmatrix} \)

Sample Correlation \( R = \begin{pmatrix} 1 & \gamma_{12} & \cdots & \gamma_{1p} \\ \gamma_{21} & 1 & \cdots & \gamma_{2p} \\ \vdots & \vdots & \ddots & \vdots \\ \gamma_{p1} & \gamma_{p2} & \cdots & 1 \end{pmatrix} \)
\[ y_{ik} = \frac{\sum (x_{ij} - \bar{x}_i)(x_{kj} - \bar{x}_k)}{\sqrt{n \sum_{j=1}^{n} (x_{ij} - \bar{x}_i)^2}} \]

for \( i=1,2,...,p \) and \( k = 1,2,...,p \). Note \( y_{ik} = y_{ki} \) for all \( i \) and \( k \).

4.15. Factor Analysis Techniques:

In statistical language, the factor analysis is a technique to replace the correlational matrix by the factor matrix. The number of columns and rows in case of correlational matrix is the same and the cell entries are nothing but the correlational values. The range of correlation values is from +1.0 to -1.0. In the factor matrix, the columns are generally less than rows, and the columns are the common factors while the rows are the number of tests/variables. The cell values in case of factor matrix are known as factor loading and their range is +1.0 to -1.0. These cell values are correlations of tests with the factors, if the factors are orthogonal (Uncorrelated). But if the factors are oblique (correlated) then the cell values in a factor matrix may or may not be the correlations between the tests and the factors.

**Extraction of factors:**

The basic data required for the extraction of factors is correlation matrix. In any correlation matrix derived from test scores or values, the diagonal cell values are empty. So the question arises what values to place on the diagonal. These can be i) reliabilities of test 2) estimates of communalities 3) all 1.00 values. In case of Hottelling Principal axes method, the diagonal entries are all 1.00. In the Thurstone centroid method, communalities are used in the diagonal of the correlation matrix.
matrix to calculate the factors. In reality, the choice of diagonal entries affects 1) the number of factors extracted and 2) the factor loading's of each factor on each test.

**Rotation of the factors:**

Factor rotation is a procedure used for the purpose of simplifying the interpretation of the obtained factor and also to increase the number of high and low positive loadings in the column of factor analysis. There are two basic methods, i) Orthogonal rotation and oblique rotation. Orthogonal rotation method is employed when we have factors that are not correlated with one another while the oblique rotation method is employed when the obtained factors are related to one another.

**4.16. Interpreting the factor:**

After the statistical computations of factoring and rotation have been completed, the next problem faced by the investigator would be of interpreting the factors. This is achieved by inspecting the pattern of high and low loading of each factor on the subtests / variables. It is remembered that the higher the loading the more important the factor is on the given variable/test.

**4.17. Terms related with factor analysis:**

**Common variance:**

Common variance is that portion of the reliable variance which correlates with other variables. It is popularly known as communality.

Communality is defined as the common factor variance in the scores. In simple terms,

\[
\text{Communality} = \text{Square and sum (sum of squares) of the factor loading over a particular test.}
\]
Specific variance:

Specific variance is that portion of the reliable variance which does not correlate with any other variable.

Error variance:

Error variance is that chance variance due to errors of sampling measurement, unstandardised conditions of testing, Physiological and other changes within the individual and the host of other influences which may contribute to unreliability. It is assumed to be uncorrelated with the reliable variance.

Uniqueness of variable is that portion of total variance which it does not have in common with any other variable.

Total variance:

According to factor theory the total variance of any variable/test can be partitioned into three independent components, namely common variance (communality).

Specific variance (known as specificity) and error variance

Therefore,

Total variance = common variance + specific variance + error variance

Reliability:

As per the reliability theory, the total variance is 1.0 and error variance is nothing but the standard error of measurement squared. In other words,

Reliability = 1 - error variance
As per Spearman-Brow formula,

\[ \text{Reliability} = \frac{2g}{1+g} \] where \( g \) is the correlation.

Co-efficient obtained by correlating the scores of one half with the other half.

\[ 1 = \text{communality} + \text{specificity} + \text{unreliability} \]
\[ 1 = \text{communality} + \text{specificity} + (1 - \text{reliability}) \]

therefore,

\[ \text{reliability} = \text{communality} + \text{specificity} \]

\[ \text{Reliability} = C_j^2 + S_j^2 \] where \( C_j^2 \) - communality , \( S_j^2 \) - specificity

**Uniqueness :**

In most of the analysis, specific variances is not separated from the error variance. In other words, specific variance and error variance are lumped together, which is called Unique variance (denoted by \( U_j^2 \))

Hence,

\[ \text{Total variance} = \text{communality} + \text{Uniqueness} \]
\[ \text{or} \quad 1 = C_j^2 + U_j^2 \]
\[ \text{or} \quad U_j^2 = 1 - C_j^2 \]
\[ \text{or} \quad \text{Uniqueness} = 1 - \text{Communality} \]

Eigen value is given by the 'Square and Sum' of the factor loading over a factor.
Percentage of variance is given by the formula

\[
\text{Percentage of variance} = \frac{\text{Eigen value of the factor} \times 100}{\text{Sum of Eigen values}}
\]

To sum up, communality, Specificity and Uniqueness are computed for the test whereas the eigen value and variance (percentage) are computed for the factors.

4.18. **Number of factors to be extracted:**

Theoretically speaking the maximum number of factors that can be extracted in any one problem can be equal to the number of variables/tests involved. For instance, if we have a correlational matrix of order 10x10, then maximum of factors can be extracted is equal to 10. But the basic problem in factor analysis is to extract the common variance, that is, the important factors which can explain maximum variance. Therefore, it is essential to decide how many factors should be extracted in a particular research problem.

There are three methods to answer this question. These are

- Fruckter formula
- Eigen value Index and
- Residual correlational matrix.
a) Fruckter formula:

The formula proposed by Fruckter to extract the number of factors in a problem is

\[
\text{Number of factors} = \frac{(2n+1) - \sqrt{(8n-1)}}{2}
\]

where \( n \) is the number of variables is a problem or correlational matrix.

b) Eigen value Index:

Another method is to go on calculating the factors till one gets the Eigen value equal to 1.0. In other sense only those factors are to be extracted which have Eigen value equal to or more than 1.0. The factors which show Eigen value less than 1.0 are not taken into consideration. This method is generally employed when one extracts the factors with the help of computer package.

D. Residual correlation matrix:

In this method, the residual correlational matrix is observed and if it is seen that most of the correlational coefficients the residual correlational matrix are zero or approximately zero then further extraction of the factors is stopped.

4.19. Data Collection:

The newly developed tool was despatched to all 120 polytechnic principals in Tamilnadu. So the need for sampling technique did not rise. The Principals were requested to mark the degree of suitability as they felt for each statements. The investigator checked all statements when the response was
received—whether any blank existed because it is essential that all statements were answered and the scale was complete in all respects.

4.20 RESEARCH STRATEGY:

Leadership behaviour is not a mere simple psychological phenomenon. It engulfs various behavioural sciences and other social sciences. Its measurement becomes complex. Most of the tools used so far for measuring leadership behaviour is the reactive measurements of the worker placed under a particular person. Through these reactions of the subordinates, behavioural aspect of the leader was tried to be established. Practically all tools used were questionnaire with survey method. Some have tried experimental method and interview methods in a few causes.

Individuals behaviour is the result of his/her action. So this researcher uses the strategy of measuring the action oriented aspect of the leadership behaviour rather than the reaction resulted aspect of behaviour through designing the action work formatted questionnaire, despatching to all principals to elicit their response on the actional concept of the behaviour and subjecting their responses to the factor analysis to ascertain action effect oriented leadership behaviour. The behaviour is the expression of one's experience. It includes not only motor activities like writing but also such activities which give us knowledge e.g. perceiving, imagining thinking etc. and emotional activities like feeling happy disgusted angry or frightened. Experience has three shades hence we get three aspects of behaviour namely cognitive, affective and conative. (Dandikar. W.N. 1981)

4.21. Scheme of Data Analysis:

First factor analysis was carried out on the basis of correlational matrix. The Principal component method was used for the extraction of factors. On the extracted factors varimax rotation was carried out for easy interpretation. Eigen value index method was used to determine the number
of factors to be extracted. Accordingly three factors were extracted as they had the Eigen values higher than one.

**Naming the factor:**

The variable under each factor were grouped in the order of factor loading. These variables were logically analysed and named accordingly viz, Leader role dynamics 2. Organizing mechanism 3. Integration of work and worker.

**Descriptive Analysis:**

Then the descriptive analysis was carried out on all 26 variables. The mean and standard deviation on all statement under each 26 variables were calculated. Each statement was analysed according to mean value. Arithmetic mean for each variables was also calculated. In this way description of mean value for each statement of 26 variables were analysed and the respondent orientation on statements was indicated.

**Combinatorial Analysis:**

Then the respondents view on every variable on each factor was combinatorially analysed. In this the mean S.D, arithmetic mean of the variable and the factor loading of each variable were combinatorially analysed. Weighing on these values the respondent preponderance on leadership behaviour was indicated.