CHAPTER 4

RESEARCH METHODOLOGY

4.1 Introduction

This chapter details out the research methodology for the present study. It explains the research objectives and a suitable methodology to achieve those objectives. Most of the researchers in Human resource area, so far have studied performance of individuals in the context of interaction between individual and work environment. Management gurus have leveraged organizational environment by altering various structures, systems, policies and processes on one hand and by focusing on individuals and groups competencies on the other hand for enhancing individual’s and organization’s performance. From the literature review we understand that the researchers have emphasized on one or two variables for performance. For instance McClelland worked on “achievement motivation” or “need for power”. Seligman worked on “optimism”. Bandura worked on “self-efficacy”. It is not clearly coming out whether there could be more than one intrinsic factor, responsible for one’s performance. If there are more than one variable, how these variables interact with each other. What is the combination effect of these variables on the academic performance of teachers? It appears that the issue of inner drives or intrinsic factors has not been examined in comprehensive manner. The proposed research proceeds to investigate this gap.

4.2 Objective of the study

The basic objective of this research study is to understand how the performance is generated by the core construct of inner forces of an individual irrespective of the environment in which he/she is working. According to the gap in the literature, the research question may be forwarded as “Do the intrinsic factors of motivation of management teachers affect their academic performance?”

Thereby the research study aims at:

1. To assess the impact of intrinsic motivational factor on academic performance of teachers in Management education.
2. To measure the strength of association of variables of intrinsic Motivation and academic performance of teachers in Management education.
3. To measure the impact of demographic factors on academic performance of teachers in Management education.
4. To evolve a model for enhancing quality of performance in education services.
4.3 Conceptual Framework

The figure 4.1 depicts the conceptual framework of this research study. This research is conducted to analyze the impact of intrinsic motivation on academic performance of teachers. Intrinsic motivation is independent variable and Academic performance is dependent variable of the study. Six factors of intrinsic motivation are identified for research purpose: Personal vision, Personal value (commitment), Optimism, Self-efficacy, Creativity, Achievement motivation. For measuring Academic performance, two factors have been selected; Teaching Learning Activities and Research activities (API score).

Fig. 4.1 Conceptual framework of research study
4.4 Hypotheses

A hypothesis is a conjectural statement of the relationship between two or more variables and hypothesis carry clear implications for testing the stated relations. This means that the hypothesis statement contains two or more variables that are measurable or potentially measurable and it specifies how the variables are related. (Gates and Taylor, 1925; Langer and Imber, 1980). There is little doubt that hypotheses are important and indispensable tools of scientific research. There are three main reasons for this belief. One they are, so to speak, the working instrument of theory. The second reason is that hypotheses can be tested and shown to be probably true or false. The hypotheses are powerful tools for advancement of knowledge because they enable researcher to get outside themselves. Though constructed by researcher, hypothesis exists, can be tested, and can be shown to be probably correct or incorrect apart from researcher’s values and opinions. This is so important that we venture to say that there would be no science in any complete sense without hypothesis. The proposed study is based on the hypotheses that,

\[ H_{01} \]: There is no significant association between intrinsic motivation factors and performance of the Management teachers.

\[ H_{02} \]: The distribution of performance is same across the different demography of Management teachers.

\[ H_{03} \]: There is no such impact of intrinsic motivational factors on performance of the Management teachers.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Hypothesis</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance</td>
<td>( H_{01.1} )</td>
<td>( H_0 ): There is no significant association between self-efficacy and performance.</td>
</tr>
<tr>
<td>Performance</td>
<td>( H_{01.2} )</td>
<td>( H_0 ): There is no significant association between personal value (commitment) and performance.</td>
</tr>
<tr>
<td>Performance</td>
<td>( H_{01.3} )</td>
<td>( H_0 ): There is no significant association between personal vision and performance.</td>
</tr>
<tr>
<td>Performance</td>
<td>( H_{01.4} )</td>
<td>( H_0 ): There is no significant association between creativity and performance.</td>
</tr>
<tr>
<td>Performance</td>
<td>( H_{01.5} )</td>
<td>( H_0 ): There is no significant association between achievement motivation and performance.</td>
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Continued.
**4.5 Research Questions**

Many people are honestly working hard to reach their dreams and goals of life very passionately, but very few are successfully able to accomplish. It is obvious that there are wide variations in the approaches adopted by different people. Some of them work and majority doesn’t work. Understanding those variations in terms of intrinsic factors can open up immense possibilities for those who are keen to enhance their capacity to grow in life. To sharpen the focus of the investigation, the research opportunity explored in this research can be formed fundamentally into the following four questions.
Question 1: What are the intrinsic motivational factors responsible for high performance of people?
First question focuses on identifying key intrinsic motivational factors of high performance of individuals. A theoretical investigation answers this question.

Question 2: How these factors create impact on the academic performance of teachers?
Second question examines as to how the presence of these factors create impact on academic performance of teachers. Statistical analysis of the survey data answers this question.

Question 3: How demographic factors affect the academic performance of teachers?
This question proceeds to discover whether demographic factors influence the academic performance of teachers. Statistical analysis of teachers’ survey data answers this question.

Question 4: Whether there could be any possible model?
This question explores the possibility of developing a new working model so that any organization or individual can utilize that for betterment. Model of the outcomes of this research work answers this question.

4.6 Research Methodology

This research study is initiated to explore the relative importance of intrinsic factors in teacher’s academic performance improvement. This research study is performed within the context of educational services of various private institutions of National Capital Region running MBA courses affiliated with Dr. A.P.J. Abdul Kalam Technical University, Lucknow.

4.6.1 Research Design

The overall design for the research study is Explanatory causal research. Explanatory research explains the phenomenon. Hypotheses and theories mark this kind of research. (Krishnaswamy, 2006). Causal research determines the nature of relationship between causal variables (independent variable) and their impact on dependent variable to be predicted. The overall design for the study is linear, consisting of two parts. Part I is qualitative approach for building framework for carrying the study. Part II is quantitative research which typically involves assessment of the relationships between key causal and outcome variables through conducting a social survey among 300 sample sizes of Management teachers of the different affiliated institutions of the university in N.C.R.

Thus the idea is to investigate frequently expressed independent variables (i.e. Personal vision, Personal value (commitment), Optimism, Self-efficacy, Creativity, & Achievement motivation) with a hypothesis that, interaction of these variables within a person has a possibility to trigger better performance (dependent variable of the study) irrespective of the environment in which he/she performs.
Research design is a step wise process adopted for a systematic investigation and statistical analysis. Figure 3.2 below enumerates each step in a sequential manner which is self-explanatory.

![Diagram showing steps in investigation methodology]

**Fig. 4.2 Steps involved in investigation methodology**
4.6.2 Population and sample

Cluster 1
Ghaziabad
56 colleges
800 Teachers

NCR Colleges
(101) Management Teachers P
(1500) Sample size S
(300)

Cluster 2
Greater Noida + Noida
45 colleges
700 Teachers

Cluster A
(14 Colleges)
40 Teachers

Cluster B
(14 Colleges)
40 Teachers

Cluster C
(14 Colleges)
40 Teachers

Cluster D
(14 Colleges)
39 Teachers

Cluster A
(11 Colleges)
35 Teachers

Cluster B
(11 Colleges)
35 Teachers

Cluster C
(11 Colleges)
35 Teachers

Cluster D
(12 Colleges)
36 Teachers

Fig. 4.3 Sampling framework of research
As earlier mentioned the scope of the study is limited to inner drives of individuals and does not include the environment. An attempt was made to select the target group which by and large operates in similar environment. The study is focused on Management teachers associated with different colleges of NCR affiliated to Dr. A.P.J. Abdul Kalam Technical University, Lucknow. The total population size of Management teachers from different institutions of N.C.R. is 1500. The questionnaire was administered to sample size of 300 management teachers. The method of sampling is multistage cluster sampling followed by simple random sampling. The selection of teachers from each cluster is based on relevant weightage in total population. The Fig. 4.3 explains sampling framework of the research study.

4.7 Instrument for measurement of factors

In this research study, for effective and flawless data collection survey method is extensively used. Survey method is the most extensively used technique for data collection, especially in behavioral sciences. Thus, these methods have been widely used to extract the most relevant information and help in better analysis of the data. In order to efficiently use the survey method a questionnaire was developed. The instrument was divided into two parts:

In Part I, the respondents were asked to provide their demographic information which included name, designation, qualification, experience, department and organization in which they are working.

Part II of the questionnaire was combination of two sections: section A and section B. In section A, respondents were asked to provide information related to their research and publication which included questions regarding research papers published in refereed journals, non-refereed but reputable journals having ISSN numbers, conference proceedings as full papers, books published by international publishers and national publishers, chapters contributed to edited books and research guidance to M.Phil. and Ph.D. This section A was developed to measure academic performance of teachers with reference to performance in research activities (dependent variable). This section was developed on the basis of API (Academic Performance Indicators) scores which are proposed for evaluating research and academic contributions of teachers as per UGC guidelines for teacher’s assessment.

A five-point Likert scale was designed to measure the responses in section B. The scale ranged from strongly agree to strongly disagree. In selecting number of points on a rating scale, Guilford (1954) suggested several considerations. If very few scale points are used, the answer scale is obviously coarse, and much information is lost because the scale does not capture the discriminatory powers that respondents are capable of making. Conversely, by adding too many scale points, the scale can become graded so finely that it is beyond the respondents’ limited powers of discrimination. Likert and Roslow (1934) investigated the reliability of attitude scales by using three variations of the Likert scale. In addition to the original 5-point scale, they also used a 3-point and 7-point scale. They concluded that the 5-point scale consistently yielded higher reliabilities than either of the two other scales.
Qualitative studies by Van de Ven and Ferry (1980) supported the conclusions given by Likert and Roslow (1934). Guided by these studies, 5-point Likert scale was constructed for questions in section B of the questionnaire. Responses were scored from 5 to 1, with a value of 5 indicating “Strongly agree” and a value of 1 indicating “Strongly disagree”. In section B of the questionnaire, total 43 questions were included. Out of these 43 questions, 36 questions were formulated to measure six factors of intrinsic motivation (independent variable of the study) and 7 questions were included to measure academic performance of the teachers with reference to Teaching Learning Activities (dependent variable). Reverse scoring was used for questions from question number 25 to question number 32.

For developing questionnaire, valid scales of related factors were used in this research study. For instance, the ideas for Personal vision questions were drawn from Chris Rogers, “Are You Deciding on Purpose?” (1998); For Personal value (commitment), scale developed and validated by Tayyab and Tariq (2001) was used; For Optimism questions, scale developed by Scheier, Carver & Bridges (1994) was used; Generalized Self-efficacy scale developed by Schwarzer & Jerusalem (1995) was used for measuring self-efficacy; For measuring Creativity, scale developed by Dr. V. K. Kumar & Dr. E.R. Holman (1997) was utilized; For Achievement motivation, scale used by Krebs, Berger, & Ferligoj (2000) was considered; and for measuring Teaching Learning Activities (Academic performance), scale developed and validated by Betsy Binkley Henry (2003) was considered in this research work.

Cronbach’s alpha was calculated to measure the internal consistency reliability of the instrument. Alpha coefficient ranges in value from 0 to 1. Nunnaly (1978) has indicated 0.7 to be an acceptable reliability coefficient but lower thresholds are sometimes used in the literature. If the value of cronbach’s alpha is greater than 0.7 then the instrument is considered reliable. The value of cronbach’s alpha calculated came more than 0.7 and thus the instrument was considered reliable for the study.

4.8 Data collection

The study aimed at management teachers working in different institutions of N.C.R. affiliated to Dr. A.P.J. Abdul Kalam Technical University, Lucknow. For the data collection, institutions running MBA courses were selected from N.C.R. and multistage cluster sampling followed by simple random sampling was used to divide the population and selecting the sample. A total of 300 questionnaires were administered to management teachers of different institutions. Only 280 questionnaires were found to be fully filled in and considered for further analysis, the rest 20 were discarded due to incomplete information.
4.9 Data Analysis Techniques

Statistical Package for the Social Sciences (SPSS) version 20.0 was religiously used for the statistical analysis. Attempt has been made to describe the statistical tools which are used in this research study. Each tool has been enumerated to bring the relevance of the tool in the context of this statistical investigation.

# Cronbach’s Alpha:

This technique is used in this research to test the reliability of questionnaire items. One of the most popular reliability statistics in use today is Cronbach’s alpha (Cronbach, 1951). Cronbach's alpha determines the internal consistency or average correlation of items in a survey instrument to gauge its reliability. Alpha coefficient ranges in value from 0 to 1 and may be used to describe the reliability of factors. The higher the score, the more reliable the generated scale is. Nunnaly (1978) has indicated 0.7 to be an acceptable reliability coefficient but lower thresholds are sometimes used in the literature.

# Chi – Square (χ2) Test:

In this research situation, as a researcher I am interested in understanding the association between two variables or to check whether they are independent of each other or dependent to each other. The chi-square test is applied to contingency tables. It allows us to establish how confident we can be that there is an association between the two variables in the population. The test works by calculating for each cell in the table an expected frequency or value – that is, one that would occur on the basis of chance alone. The chi-square value means nothing on its own and can be meaningfully interpreted only in relation to its associated level of statistical significance, which in this case is p value <0.05. This means that factor under consideration is affecting the performance of academic fraternity in management education at 5% level of significance.

# Linear Regression Analysis:

In this research study, we take the observed values of X i.e. different variables to estimate or predict corresponding Y values i.e. academic performance indicators. To find out effect of academic and non-academic i.e. industry experience on academic performance indicator, regression analysis can be performed. The bivariate regression may be expressed as:

\[ Y = \beta_0 + \beta_1 X_i \]

where the value of the dependent variable Y is a linear function of the corresponding value of the independent variable X_i in the ith observation. The slope, \( \beta_1 \), is the change in Y for a one (01) unit change in X. The intercept, \( \beta_0 \), is the value for the linear function when it crosses the y axis. It is the estimate of Y when X=0.
# Kruskal - Wallis Test (Non-parametric test)

The Kruskal - Wallis Test is used to test the difference between more than two independent samples. This test is an alternative to one way independent ANOVA if the assumptions of a parametric test are violated. The Kruskal –Wallis test is based on the rank of the scale variable, which in this case is API score and Teaching learning performance; for each independent group like NET qualified or not NET qualified respondents, or designation like Assistant professor, Associate professor and Professor and others.

# PLS – SEM Analysis (Partial Least Squares Structural Equation Modeling) using Smart PLS

Structural equation modeling (SEM) is a second-generation data analysis method that is often used in research because it can test theoretically supported linear and additive causal model (Haenlein & Kaplan, 2004; Statsoft, 2013). With SEM, researcher can visually examine the relationship that exists among variables of interest in order to prioritize resources to better serve their purposes. There are two sub models in a structural equation model; the inner model specifies the relationships between the independent and dependent latent variables, whereas the outer model specifies the relationship between the latent variables and their observed indicators.

4.10 Concluding remarks

In this chapter overall research design has been presented. The objectives of the study and conceptual framework are highlighted. The research questions and the formulation of hypotheses are also highlighted. The details of research methodology, questionnaire design, its validation and administration are discussed. This chapter also included data analysis techniques used in this research study for analysis and interpretations of the results.