CHAPTER III

DESIGN OF THE STUDY

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3.1. Basic Design

The basic design selected for this study was that of comparing the academic achievement of post-graduate students in the Faculties of Arts, Science and Education in the M.S. University of Baroda with varying levels of the use of the library services available to them. The statistical technique of multiple regression analysis was used to test the following hypothesis : There is no significant effect of the use of available library services on the academic achievement of post-graduate students in the Faculties of Arts, Science and Education in the M.S. University of Baroda. Academic achievement has been taken as the dependent variable in this study. Library use has been treated as an independent variable along with the socio-economic status, level of intelligence and past academic achievement, which are included as control variables.

These three have been selected as control variables because a number of studies in the past have established their importance in predicting academic success.

3.2. Sample

It was intended to include the post-graduate students of all the faculties of the M.S. University of Baroda in the sample in this study. The following criteria were applied in choosing the students in the final sample :

1. Students who have to entirely depend upon the library facilities of the Hansa Mehta (University) Library for their reading.
2. They do not belong to faculties which have their own separate libraries.
3. They should all be studying in the final year of their respective courses, during the academic year 1968-69.

Post-graduate students of the Faculties of Technology, Medicine and Social Work were excluded from the sample because there are separate libraries in these institutions and their students use not only these libraries but the Hansa Mehta Library as well. M.Ed. students and M.A. Psychology students studying in the Faculty of Education,

are allowed the use of the Centre of Advanced Study in Education library. So, they were also not eligible for inclusion in the sample. However, the students of the B.Ed. class in this faculty are not allowed to use the CASE library and like other post-graduate students in the Faculties of Arts, Science and Commerce, they have to bank upon the Hansa Mehta library only for their reading needs. It was intended to include the students of the following categories in the sample, at the outset :

1. Final year M.A.
2. Final year M.Sc.
3. Final year M.Com.
4. Final year M.Sc. (Home).
5. Final year M.A. (Fine)
6. Final year LL.B.
7. B.Ed.

It was found out from preliminary enquiries in the library that students of the M.A.(Fine) class, make very little use of the Hansa Mehta library resources. It is perhaps because of the particular nature of their courses, which do not require exhaustive reading. For this reason, as also the very small number of students in the final year M.A.(Fine) class, this group was not included in the sample. For the same reason of too small a number, the

final year M.Com. and M.Sc.(Home) students had to be left out of this study. Thus, the only available groups to be included in the sample were the students of final year M.A., final year M.Sc., final year LL.B. and the B.Ed. classes. The total number of students who were on the rolls in the above classes in 1968-69 were as follows :

M.A.	-	141
M.Sc.	-	137
LL.B.	-	149
B.Ed.	-	160

All the above students were included in the sample. The number of students in each group being not very large, no attempt was made to select a representative sample from them, either by random numbers or otherwise. Instead all the students were included as subjects in the sample. During the year, they were administered tests and questionnaires to be described later, for measuring the variables required in the study. Some students were not available for the administration of tests and other tools. Some of them did not appear in the final examination at the end of the year. Because of both these reasons some students had to be deleted from the final sample which was used for analysing the data. Very few

students of the final year LL.B. class could be available for test and questionnaire administration and hence this group was eliminated from the sample. The following is the final number of students used in the analysis of data :

1. M.A.	-	56
2. M.Sc.	-	104
3. B.Ed.	-	141
Total		301

The total sample is considered to be made up of three separate samples, designated as the M.A., M.Sc. and B.Ed. samples. The effect of library use on academic achievement has been estimated independently for the three samples as well as for the entire sample.

3.3. Library Use

Library use by each student in the sample had to be measured in quantitative terms, so that its effect on academic achievement be found out by the use of appropriate statistical procedures. It is very difficult to measure the use made by individuals of the library services in quantitative terms, because every individual uses the library in his own way. His motivation in reading books, his concentration at the time of reading, his ability to understand the reading material, his seriousness while reading are factors which widely differ among different

persons and it would be very difficult to measure them in quantitative terms. It is still more difficult to devise a scheme of measurement which can be uniformly applied to individuals who are studying different subjects. Library use expectations are likely to differ among various disciplines to a great extent. Again, each individual sets his own goals regarding the use of available library services. Because of all such considerations, a quantitative measurement of the library use of individuals is possible only from observations which can be numerically or quantitatively recorded for each individual and how he uses the library. It is possible for example to find out the number of books borrowed from the library by a person over a particular period of time. Similarly, the time he keeps the book before returning it, the time he spends in the reading rooms or stacks, his knowledge of library rules and regulations are some other aspects of the library use which may be quantitatively noted.

In this study library use has been considered to be made up of the following factors.

1. Number of books borrowed for home reading.
2. Time spent in the reading room and the stacks on the library premises.

3. Number of books and journals read in the reading room and the stacks.
4. Familiarity with library rules and regulations.
5. Number of books owned.
6. Number of books received from other sources.

The above factors were measured in quantitative terms for each student through observation of library records, a questionnaire and a test.

3.4. Books for Home Reading

Books taken home from the library provide us with an objective measure of the use of library by students. It is a measure which can be noted down from the records of books issed to them every day in the library. Each post-graduate student is allowed to get two books issued to him at a time. The total number of books taken for home reading during the academic year 1968-69 by each student in the sample was recorded. For this purpose the investigator used to look into all the issue cards daily in the library and note down the books issued to the students in the sample for each day. Thus the total number of books taken for home reading during the year by each student in the sample could be counted.

Unfortunately it was not possible to measure the amount of time for which a book was kept by the students

for home reading. The library has a system of working in which no record is kept of the date of return of a book by the students. As soon as the book is returned, the student is given back his library ticket. As the students return their books any time during the working hours of the library and as no record is kept of the return of books by the library staff, it was impossible to find out the time during which the book was in possession of the student. So it was not possible to measure this important factor namely, the amount of time a book is kept for home reading.

3.5. Time Spent in Reading Room and Stacks on the Library Premises

Another important factor which was considered as part of library use in this study was the time spent by students in the reading room and stacks of the library. This would include various activities, such as reading books and journals, browsing through books and journals, borrowing or returning books, consulting catalogues and indexes, collecting references and so on. Each student in the sample was given a questionnaire to fill in. He was asked to state the number of hours per week on an average he spends in the reading room or stacks. The questionnaire was administered towards the end of the academic year and the

student was asked to state the average number of hours per week spent by him during the year in the library. Record of the time spent in library by different students in the sample was thus obtained.

3.6. Number of Books and Journals Read in the Reading Room and the Stacks

The studehts were asked to state the number of books and journals read by them per week on an average in the reading room and stacks of the library. This information was also collected through the questionnaire towards the end of the year to facilitate the students to give an average figure.

3.7. Familiarity with Library Rules and Regulations

A test of library familiarity was specially constructed to measure, in quantitative terms, the familiarity of each student with the rules and regulations of the Hansa Mehta Library. The library staff and some of the teachers in the University were consulted in framing the library test. The items included in the test were related to the rules and regulations of the library such as the opening and closing times, timings for issuance of books, location of different sections of the library and so on. The rationale for such a test of familiarity with library rules is based

on the assumption that those who make more use of library facilities are likely to be more familiar with its rules. Hence this measure was included as a part of library use.

3.8. Number of Books Owned and Number of Books Received from Other Sources

Number of books owned by the students which are required for their studies do not really form part of their library use. The same is the case with the books they receive from sources other than the library, such as teachers, friends, other libraries etc. But both these factors were included as part of the total library use by students in the sample because of the following considerations :

1. It is important to measure the total amount of independent reading which students do in order to find out its effect on their academic achievement.
2. Number of books owned and received from other sources by an individual may influence his use of the library facilities.

Because of these reasons, it was decided to include the above two measures as part of the library use of students. Data for both was collected through the questionnaire mentioned earlier. They were asked to state the number of books, which are required by them for their

studies, are owned by them. Through another question, information regarding the number of books on an average per week which they received from other sources, was collected. They were also required to indicate one or more sources, other than the library from which they got books. These included friends, teachers, departmental libraries, other libraries and any other source. They were asked to list difficulties, if any, in getting books required for their studies from the Hansa Mehta Library. This qualitative information regarding their difficulties, naturally has not been used in testing the hypothesis, but classified and reported separately.

The six factors stated above were considered to be the different aspects of library use. In finding out the effect of library use on academic achievement, these were utilized independently at first, and then combined to give a total library use index, which was used as a single factor in finding out the effect of library use on achievement.

3.9. Socio-economic Status

A measure of the level of the socio-economic status of students has been used as one of the control variables in this study. The knowledge of the social environment of

the individual is very important. Educational research has shown that not only aspirations but achievement of an individual is related to the group or class to which he belongs. In many studies on prediction of academic success, the level of socio-economic status has been used as a control variable. In a country like India, where there are wide variabions in the level of socio-economic status of college students, it is all the more important to use this factor as a control variable. This is why the present study has attempted to measure the level of socio-economic status of students and use it as one of the independent variables in the regression analysis. The tool used for this purpose is the Socio-economic Status Scale (Urban) developed by B.Kuppuswamy[1]. This scale has been developed by the author for Indian conditions. He has used three variables in determining the social prestige of an individual. They are, education, occupation and income. All three are important indices of socio-economic status. The three variables have been appropriately classified into seven catagories each and differing weightages have been given to each of them. The scale has been standardized taking all the necessary precautions. The norms have been given so as to determine the socio-economic status of an individual among five social classes, namely, upper, upper middle, lower middle, upper

lower and lower. Social prestige is defined in an operational manner in this scale and the variables used are capable of being objectively ascertained. Form B of the scale was used in the present study. Form B requires a student to give information regarding the education, occupation and income of his father or guardian. From A, requires an individual to answer the above questions regarding himself. The questions asked in both the forms are identical. The students in the sample were administered this socio-economic scale along with the questionnaire on library use and the library test. The written instruction in the scale required the students to answer the questions regarding the education, occupation and income of their father, or guardian if father is not alive. But they were orally told to answer these questions regarding themselves, if they happened to be their own guardians. These were some students in the sample who were in this category. In this way the socio-economic status of each student in the sample was determined.

3.10. Past Academic Achievement

Past academic achievement has been widely used as a variable in the prediction of academic success later. It has been shown by many studies that one of the best predictors of future ability is present ability. In many

studies on college achievement, high school success has been used as one of the prediction variables. High school achievement has been reported by Adams[2] as the best single predictor of college achievement. Dressel[3] reported high school grades to be the best predictors of college achievement with a correlation coefficient of .55. Many other studies have reported similar findings.

In this study, past academic achievement has been used as a control variable because of the reasons stated above. It was decided that the qualifying examination results be taken as an indication of the past academic achievement. Thus the results of B.A., and B.Sc. examinations were considered as the measures of past achievement respectively for the M.A. and M.Sc. samples. For the B.Ed. group the results of the first degree examination, such as B.A., B.Sc., B.Com. or B.Sc. (Home) were taken to be the measures of past achievement. It was thought that past achievement can best be indicated by the qualifying examination results of students. In the B.Ed. group some students had already taken M.A., M.Sc., M.Com. or similar degrees before joining the B.Ed. course. For keeping uniform standards it was felt that only the qualifying examinations results be considered as measures of past achievement. It would have been better to select only

those students who have not taken any other degrees after their qualifying examinations in this study. But for the reasons stated while discussing the sample size it has been explained that because of the small number of students available for this study, it was not possible to further reduce the sample size by applying criteria such as the one stated above.

Information regarding the past academic achievement of students in the sample was collected by the investigator from the college records. Every student has to submit a true copy of the marksheet of his qualifying examination at the time of seeking admission. This record of total marks obtained at the qualifying examination is kept in the respective college offices. It is from these records that the investigator noted down the total marks obtained by each student in the sample. Needless to say that an objective measure of the past academic achievement was obtained, within the limitations of the ability of examination marks to estimate academic achievement.

It was found that students who were studying in the Sr.M.A., M.Sc. Final and B.Ed. classes, who constituted the sample in the present study, had passed their qualifying examinations from different universities and in different

years. This brings in variation regarding their academic achievement as shown by the qualifying examination results. In order to control this variation two measures could be taken. One way out was to select those students only who had passed the qualifying examination of a single university in a particular year. For the reasons stated earlier regarding the small number of students available for this study, it was not possible to delimit the sample to only those who fulfill the above condition. It was also possible to statistically control the variation in the differing examination results. This could be attempted, for example by converting the raw scores to standard scores, which are much more efficient than the former. Unfortunately it was not possible to attempt this procedure because the investigator could not get the required data from different universities for the several years in which the students had passed their qualifying examinations. So this important variable of past achievement has been used in this study with the following assumptions :

1. Examination marks have been used as a measure of academic achievement.
2. Examination results of various universities in different years have been considered to be at par and comparable.

For ease of comparison the total marks obtained by each student were converted into percentages. These percentage figures have been used in the study as measures of past academic achievement.

3.11. Level of Intelligence

A very large number of studies have established the close relationship between the level of intelligence and academic achievement of individuals. In a study on prediction of academic achievement done by Louer and Evans[4], it has been reported that intelligence alone correlated .42 with college achievement. Lawer and Evans have concluded in this study that as the student proceeds in college, the relation between high school achievement and college achievement decreases and that between college achievement and intelligence increases. Many other studies support such findings and there is reason to believe that the level of intelligence is one of the variables which has a considerable influence on academic achievement. This is why, it has been included as a control variable in this study.

J.C.Raven's Progressive Matrices Test (Revised order 1956) has been used to measure the level of intelligence of the students in the sample in this study. This test has been selected for measuring the level of intelligence of

the students because of the following considerations:

No suitable intelligence test was easily available for use with the age group of students who were to be given the test. Most intelligence tests in India appear to be constructed and standardized for school going children. No test which is meant for young persons in their late teens or early twenties was available which was standardized for use in our country. It was, therefore, decided to use a test which can be given to students who have reached their adulthood. Raven's Progressive Matrices Test was selected because of its wide use all over the world. It is acknowledged as an efficient test of general intelligence though Mr.J.C.Raven[5] has politely described it as a test of observation and clear thinking and not a test of 'general intelligence' by itself. But the fact that it correlates 0.86 with Termen-Merril scale, and has been found to have a ' g 'saturation of 0.82, makes it a very reliable and valid tool for the measurement of the level of general intelligence. It is also useful in the present study for another reason. Being a non-verbal scale, it can safely be administered to groups of students who come from different areas of study such as Arts, Science and Education, without the danger of their subject-area biases influencing the test scores. This test has been widely used in India in a large number of research studies and

in other testing situations. It has also been standardized for local conditions and a few sets of Indian norms are available. Unfortunately most of this type of work too has been done on school going children. The investigator made enquiries in the N.C.E.R.T. to find out whether norms for adults are available for this test. Dr.Perin H.Mehta, the then officiating Head of the Department of Educational Psychology, N.C.E.R.T., Delhi, informed him that the only norms which they in the N.C.E.R.T. have for this test are for students of Class VIII of schools in Delhi. Fr.J.Ortega of the St.Xavier Institute,Ahmedabad, who has worked on this test was approached in this connection. He sent norms for school going children collected in Bombay for this test. Finally, it was decided to use the test without appropriate norms for adults in India. This, however, is not going to affect the present study very much. It is not the primary purpose of this study to measure the exact level of intelligence of an individual who is in the sample. What is required is a comparison of the level of intelligence of the different students in the sample. So it was thought that the total raw score obtained by an individual on this test can be used as a measure of his level of intelligence for the purposes of this study, that is using the level of intelligence of students in the sample as one of the control variables.

The test was administered to the students as an untimed capacity test. The test presents a total of sixty problems in groups of twelve in five sets. The total of raw scores obtained by an individual was taken as a measure of his level of intelligence for the purpose of this study.

3.12. Academic Achievement

Academic achievement of students has been considered as the dependent variable in the present study. The final examination results of the students in the sample were used as a measure of their academic achievement. M.A. and M.Sc. examination results were made available to the investigator by the Examination section of the University office. The total marks obtained by a student in these examinations were taken as a measure of his or her academic achievement. For B.Ed. students, the results were available in the Faculty of Education and Psychology. The total marks obtained by different students in the three samples were converted into percentages, so that they could be used in statistical analysis. No attempt has been made to change the scores into standard scores, because it has not been done for the qualifying examination results. Examination results cannot be considered as valid and reliable measures

of academic achievement. But as this is the only measure available, it has been used with all the inherent limitations. It must, however, be stated that in the M.S.University of Baroda, all the three examination results namely, M.A., M.Sc. and B.Ed. are not based on a single examination taken at the end of the course. In M.A. and M.Sc. thirty percent weightage is given to periodical tests and assignments, and the remaining to the final examination. In the B.Ed. class, no external examination is held. The final result is based on periodical tests and assignments given during the two semesters in which the B.Ed. course is divided. So the results are not based on one single examination and thus the chance element is reduced to a great extent.

3.13. Statistical Procedures

The purpose of the present study is to find out the effect of library use on the academic achievement of post-graduate students in the M.S. University of Baroda. Specifically the following hypothesis is to be tested : There is no significant effect of the use of available library services on the academic achievement of post-graduate students in the Faculties of Arts, Science and Education in the M.S. University of Baroda. The statistical technique of multiple regression analysis is used for this purpose. A multiple regression equation estimates the changes in the dependent

variable from changes in two or more independent variables. Such equations afford a more exact basis for making such estimates than do linear equations obtained by any other method. The multiple regression equation serves to sum up all the evidence of a large number of observations in a single statement which expresses in condensed form the extent to which differences in the dependent variable tend to be associated with differences in each of the other variables.[6] The partial regression coefficients in a multiple regression equation represent the weighted contribution that each independent variable makes to the total estimate of the dependent variable. The equation will predict the average change in the dependent variable for a unit change in any one of the independent variables. Thus, it is possible to estimate the influence of one independent variable on the dependent variable, keeping in control the influence of other independent variables. The present study is essentially the problem of predicting academic achievement of the post-graduate students of the M.S. University of Baroda, studying in the Faculties of Arts, Science and Education. Several factors naturally influence the prediction of academic achievement, and library use in one of them. Multiple regression analysis has been chosen as the statistical procedure in the design

of this study because it is one of the best techniques through which the effect of library use (or different aspects of library use) on academic achievement can be estimated while controlling the effects of other factors such as level of intelligence, socio-economic status and past achievement.

3.14. Summary

The basic design selected for the present study was to compare the academic achievement and library use of the post-graduate students in the Faculties of Arts, Science and Education in the M.S. University of Baroda. Specifically the following hypothesis is tested : There is no significant effect of the use of available library services on the academic achievement of post-graduate students in the Faculties of Arts, Science and Education in the M.S. University of Baroda. Multiple regression analysis is used as the main statistical technique to test the hypothesis.

The entire sample is made up of 56 Sr.M.A., 104 M.Sc. Final and 141 B.Ed. students. All these students were studying in the final year classes of their respective courses during 1968-69 and they were entirely dependent upon the Hansa Mehta Library for their reading.

Library use for the purposes of this study is considered to be made up of books taken for home reading, time spent in the reading room and stacks, number of books and journals read in the library, familiarity with library rules and regulations, number of books owned and number of books received from other sources. All these factors are used, separately at first and as the total library use index later, as independent variables in the regression equation.

Socio-economic status, level of intelligence and past academic achievement are used as the other independent variables in this study. The former two are measured by standardized tests and the last by qualifying examination marks.

Academic achievement, measured by final examination marks is used as the dependent variable. Multiple regression analysis is used to find out the effect of library use on academic achievement.

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