Chapter 3

Research Methodology

3.1 Introduction

Research Methodology comprises of research methods and various steps undertaken while conducting a research. The researcher has followed 'Grounded Theory' method (Strauss, et al. 1998) for the study. In this method, data is collected systematically and analyzed through the research process. In this type of research, a researcher does not begin a project with a preconceived theory in mind; instead, a researcher begins with an area of the study and allows the theory to emanate from the data.

Research broadly classified into two categories: the first, review of the literature and the second, a collection of primary and secondary data. The exhaustive literature review of latent and latest literature involved books, journals, online sources, reports, unpublished Ph.D. thesis, etc. Evidence is collected from primary and secondary sources utilized for constructing research argument. Information related to handwritten manuscripts has been collected from various libraries and online sources. These mainly include Devanagari Brahmanical manuscripts from India, manuscript design culture from other countries as well as modern theory and practices of Graphic and Publication Design. The theoretical approaches of manuscriptology were explored based on the Indian approach as well as approach of other countries that is the national and the international approach.

In brief, a theoretical framework has been constructed in understanding various aspects related to the literature review. Most of the literature in the review has enhanced the scope of the present study to investigate various aspects related to manuscripts design culture in India. It also provides insights into their design process as a visual communication product in detail. Modern publication design process and the use of design fundamentals in it are examined.
The present study initiated in the direction of the field of the process of handmade book design in India during the seventeenth century and their design concepts. The focus is to know more about layout and composition of Devanagari Brahmanical manuscripts of the seventeenth century available in Maharashtra. The attempt is made to know more about handwritten manuscripts, mainly in the area of publication design. As the graphic design subject encompasses a large variety of specialization, the developments in the field of modern publication design are considered for the study.

The review of previous studies related to Indian manuscripts and their design process, the manuscript writing tools and instruments, composition styles of the Indian manuscripts, various design features, a schematic structure of manuscripts are dealt in detail. The journal articles on the manuscript design trends in the various countries of the world also reviewed to understand similarities and differences in design features. An overview of modern graphic design (publication design), taken into consideration for comparative analysis. These modern designs are fashioned out of digital technology and are functional with the user-centric approach.

The aim of this chapter is to discuss research methodology applicable to this particular study. The chapter contains the sections explaining approach to the problem, objectives, hypothesis, research design and methodology, data collection, scope and limitations of the study.

3.2 Approaches to the Problem

The researcher has chosen qualitative method using non-numerical data with the interpretive approach. Interpretivism is an explorative way in which strategies followed are by observation. Interpretivism approach mainly chosen in sociology, cultural and anthropological research which communicate the artwork (Hickman, 2008). Interpretive methods rely upon linguistic rather than numerical data. The data collected in the application of such methods are without pre-categorization with important aspects, and the variations are identified in the samples. Since qualitative analysis does not involve power analysis sample size is less in number but chosen depending upon the criteria. (Robert Elliott, 2005, pp. 147-152)

The researcher initially identified repositories of handwritten manuscripts available in the state of Maharashtra, India. The later on the researcher has visited various accessible libraries personally to collect sample data. In the libraries, the manuscript catalogues
were screened first to locate for the seventeenth century Devanagari Brahmanical manuscripts. These manuscript catalogues available in the libraries have remained the basic source of data collection for this research work. The researcher could get the access to handle a few manuscripts physically. The basic information documented in the spreadsheet under various heads such as library accession number, year of making, size, number. of lines, number of folios, along with observations such as special remarks. The remarks are nothing but principal observations of the manuscripts, which led the researcher select ultimate final representative samples for the study.

The data of relevant manuscripts needed for the research collected by taking photographs of selective pages. A few libraries provided photocopies of the representative pages of the manuscripts that have potential for the study.

Apart from this, the criteria have been defined to study various aspects of the selected manuscripts. These predefined categories and identified variables have guided the researcher to select representative sample of the manuscripts for the study of the population.

A review of the literature and conceptual framework has further helped the researcher formulate the strategy to analyze representative manuscripts using variables.

These selected manuscripts were scrutinized using visual representation method and application of visual thinking technique – the practice-based method used to explore and present research finding (Gray and Malins, 2008, pp 103-107). Computer-aided visualization through diagrams is utilized as a tool. Finally, the qualitative content analysis have been carried out, which was based upon the variables related to modern design principles practiced for designing a publication.

The observations of the manuscripts have been compared with various types of modern book designs or the publication designs — a specialized area of modern graphic design. These publications comprise printed small booklets, books, magazines, etc. The publications are chosen from a wide range of subject; such as religion, history, poetry, science, mathematics, literary science, fiction, etc. They are primarily in Devanagari script. However, English being global language of publications in Roman script is also considered. The conclusions are drawn based on the observations to validate the hypothesis.
3.3 Reason for Choice of the Topic

This study will reveal the history of publication design in India prior to printing technology revolution, which began in India in the eighteenth century. It will be interesting to find out the similarities and differences in the page layout designs of the manuscripts and the modern publication design aspects. This explorative study will compare layouts under the various head of layout design. The researcher strongly believes that the designers of the Devanagari Brahmanical manuscripts of the seventeenth century available in Maharashtra had knowledge of graphic design, and they had their own system and method of page layout design. The preliminary observations of the manuscript designs of the seventeenth century revealed that manuscript designers have followed a definite process for creating them. These manuscript design styles and patterns are different from the manuscripts of the other cultures. These patterns and styles are still noticeable in the modern publication designs in India. Hence, the researcher wanted to contribute significantly in the area of history of publication design in India through all these observations in-depth with a systematic approach.

3.4 Title of the Thesis

The title of the thesis is "COMPOSITION AND LAYOUT DESIGN OF THE SEVENTEENTH CENTURY DEVANAGARI MANUSCRIPTS IN MAHARASHTRA AND MODERN GRAPHIC DESIGN: A COMPARATIVE STUDY OF DESIGN CONCEPTS".

3.5 Objectives of the study

The main objective is to study "COMPOSITION AND LAYOUT DESIGN OF THE SEVENTEENTH CENTURY DEVANAGARI MANUSCRIPTS IN MAHARASHTRA AND MODERN GRAPHIC DESIGN: A COMPARATIVE STUDY OF DESIGN CONCEPTS".

The study will focus the following objectives:

A. To understand the conceptual layout design process of the seventeenth century Devanagari Brahmanical manuscripts

B. To study various types of compositions and layout designs of the seventeenth century Devanagari Brahmanical manuscripts
C. To investigate traditional Indian design thoughts related to functionality and aesthetics of page layout design.

D. To evaluate relationship between the seventeenth century Devanagari Brahmanical manuscripts design and contemporary publication by articulating foundation design aspects of layout and composition

E. To analyze and interpret the data

F. Finally, to draw conclusion

3.6 Hypothesis of the Study

The main hypothesis is the seventeenth century Devanagari Brahmanical manuscripts designers followed design theories in the planning of handwritten manuscripts.

Other Hypotheses:-

H₀ -1 A structure of manuscripts contains many elements which are continued in modern publication design.

H₀ -2 Devanagari Brahmanical manuscript designers followed distinct system, style, and pattern for manuscript design.

H₀ -3 Devanagari Brahmanical Manuscripts designers believed in simplicity and hence they focused on the content of the text and followed minimalistic approach to other factors such as decoration and ornamentation.

H₀ -4 Manuscript designers explored various types of editorial style depending upon the type of content

H₀ -5 Manuscript designers employed design principles in composition of layout

H₀ -6 Devanagari Brahmanical Manuscript designers of the seventeenth century remained unaltered by the thoughts of other contemporary design ideas and they did not adopt any other style in their design

3.7 Proposed Study

This researcher will explore selective representative manuscripts under various heads of fundamental principles of graphic design. The objectives of the study include understanding manuscript architecture i.e. form, structure, layout grid, baseline grid,
margins, columns, text flow, and page-turning system. There were other objectives as well, for instance, appearance, binding system and its effect on the page layout. Visual factors such as various layout styles, placement of elements, size, readability, legibility of text, use of colour, use of contrast to achieve visual order & hierarchy, consistency in placement and among decorative elements on pages, navigation system, cover page, separator page design, text wrapping for visuals, title page, etc.

The observations of the manuscripts will be compared with modern graphic design, especially with the publication design. The contemporary publications based upon key variables with respect to layout and composition strategies will be studied in this research as well.

3.8 Assumptions

The study assumes that the Devanagari Brahmanical manuscript designers of the seventeenth century Maharashtra were aware of aesthetics and its application in page layout design. They followed design principles similar to modern publication design while producing Devanagari Brahmanical manuscript. A form of books and the layout styles practiced in the seventeenth century Maharashtra are found in modern publication designs. Based upon the content and the subject of the manuscript, the designer has adopted appropriate layout and editorial styles.

3.9 Research Design and Methodology

![Research Model – Design and Methodology](image)

Figure 3.1: Research Model – Design and Methodology

3.9.1 The Universe

The study is undertaken to find layout and composition styles of the seventeenth century handwritten Devanagari Brahmanical manuscripts available in Maharashtra.
The manuscripts have been considered as cultural heritage of India. According to a mission initiated by the Government of India to preserve handwritten manuscripts ‘The National Mission for Manuscripts’, the large number of manuscripts are found spread across India. Such manuscripts are estimated to about five million in number, i.e. the largest collection in the world. They are in the custody of various institutions, and private collectors. Documentation of large number of manuscripts is yet to be done. Manuscripts are found in diverse scripts, languages; and they are aesthetically decorated with a variety of themes, illustrations, calligraphy, illuminations, etc. (History, 2016).

3.9.2 Selection of the Sample

Devanagari Brahmanical manuscripts of the seventeenth century, which are available in Maharashtra, have been selected for the study. They are available in a variety of subjects and are beyond religious boundaries. They have been written outside temples and monasteries as well.

The criteria for selection of sample are based upon approach used in finalizing samples (Jane Ritchie, 2003, p. 96). Various samples chosen from populations are with the level of diversity and defined criteria. In addition, the selection of the sample is based on the aim of the study. A review of literature and formulation of hypothesis are guided in identifying characteristics of the manuscripts to be studied, and the variables on which manuscripts are analyzed.

The elements useful to study manuscripts can be best summarized into two groups:

1. Layout and ruling were crucial in revealing structure and styles
2. Types of decoration were supportive in revealing in artistic practices

Primary criteria for the Selection of the Manuscripts:
- Manuscript drafted or written on a paper
- Script used for writing is the Devanagari
- Manuscript should be complete with date

Secondary Criteria for the Selection of the Manuscript:
Based on the layout formats, the representative manuscripts have been selected for the study. The selection criteria has based upon following features so that it could achieve the aims and objectives of the thesis. They are as follows:-

1. Manuscript, which will enable to study form, functions and page architecture
2. Typography oriented manuscripts with the rubrics
3. Manuscripts with the use of accent marks
4. 'Bilingual' or multilingual manuscripts
5. Manuscripts with distinct layout styles
6. Manuscripts comprise illustrations or diagrams
7. Manuscripts with distinct design features
8. Manuscripts design influenced by various cultural designs

Printed modern publication designs with a variety of subjects and sizes selected to compare them with the above-mentioned purposive samples of the seventeenth century Devanagari Brahmanical manuscripts. The samples chosen are: (i) books printed in Devanagari and in Roman scripts; (ii) the publications with only typography, and (iii) the publications with typography and imagery with variety of layout styles are considered for the study.

3.9.3 Period of the Study

This study has been conducted during January 2011 to December 2016.

3.9.4 Tools used for collection and Synthesis of Data

In this study two types of data have been collected, i.e. primary data and secondary data.

Tools used for collecting primary data are-
- Digital Photography
- Photocopy Machine

To demonstrate construction methods used for making of template designs, the vector graphics digital software such as CorelDraw, Adobe Illustrator put into application. Documentation of data recorded using Ms-Excel. Computer generated imagery created in Adobe Photoshop to get visual effects.

3.9.5 Primary Data:

The key source of information for the research is in the form of digital photographs and photocopy of the pages of the manuscripts. First, the libraries and repositories have been identified from various sources and visited them. The catalogues were examined for the seventeenth century Brahmanical Manuscripts in Devanagari script and meaningful data was documented. Further, a few manuscripts were observed physically. Listed them, and collected the information based on the criteria prescribed. A few
representative manuscripts were chosen as a purposive sample for the study. The researcher strictly followed guideline prescribed by National Mission for Manuscripts of India while handling, scanning and photographing the manuscripts.

For a comparative study of the above-mentioned manuscripts, the contemporary printed publication designs with distinctive design feature were chosen.

3.9.6 Secondary Data

Secondary data collected from various sources like:
1. Web sites and other online sources using search engines on the Internet
2. Books
3. Magazines
4. Reports and publications of the organizations
5. Newspapers
7. Articles published/unpublished
8. Master and Ph.D. dissertations in the related area

Secondary data collected from various libraries, institutional websites, and online sources, for instance, Victoria Albert Museum, Oxford Museum, British Library, Jainepedia, Indira Gandhi National Centre for the Arts (IGNCA), New Delhi, Museums of India, etc. Undergone video tutorials of free online courses available at Stanford University and Khan Academy. The online course 'Art of Medieval Europe' – A book and the dissemination of knowledge in medieval Europe teaches medieval bookmaking process. This online course gave insights on how books were produced, used and circulated in the monasteries of Europe during the medieval period, and finally turned out a part of the personal library.

3.10 Significance of the Study

The manuscript is a manual hard work and extraordinary expression of human designing skills, which needs to be appreciated, preserved and followed for further enhancement in the area of Graphic Design. The manuscripts in India are valuable historical sources handed over to the present generation of scholars. They touch upon a wide spectrum of topics, social as well as religious.
Chapter 3: Research Methodology

The in-depth study of design and layout composition will be useful for the deep understanding of the seventeenth-century Indian design perspective in Devanagari Brahmanical Manuscripts. This investigation will provide a new dimension in understanding Indian Design History and throw light upon the layout and compositional styles and techniques.

The manuscript design process includes the use of design elements such as margins, columns, alignment of text, folio number (page navigation system), text in the handwritten calligraphic form, illustrations, symbols, colophon area, etc. Paintings or illustrations are placed along with a text on a page as a supportive element. In the beginning and in the endnote areas (colophon area) of the manuscripts, one can easily identify the author, subject, geographical area, time of the manuscript, etc. In the manuscript designs, the symbols are used for the specific purpose (semiotic). Similarly, the fundamentals of design are also applied to enhance the aesthetic value of layout. If a manuscript is part of a private collection or got a good patronage for drafting and designing then one can see special colours, e.g. silver and gold in paintings.

This study will focus on the Indian Graphic design concepts and ideologies of the seventeenth century Devanagari Brahmanical Manuscripts available in Maharashtra. The design features of manuscripts are compared with modern graphic design.

3.11 Scope and Limitations of the Study

Although the region is chosen for the study i.e. Maharashtra, one of the states in India, but reaching every manuscript for the study require teamwork, a huge amount of funds and time. The researcher has also observed that most of the available manuscripts are incomplete and with non-occurrence of date.

Calligraphic details of the manuscripts have not been studied in-depth in the current study. In-depth study of calligraphy, typography and font design is a specialized branch of Graphic Design. Such type of study involves an integration of various aesthetics related to form studies of the script and technical attributes associated with software and programming. Only readability, legibility, bold, and contrast features are considered for the study.

Although Jaina manuscripts of the seventeenth century were also written in Devanagari script, they are not considered for the study because the style followed in designing them, is a unique. The patronage of the Jaina has influenced in the form of rich
ornamentation and bold approach to colour. Therefore, the study of Jaina manuscript altogether requires separate treatment for their investigation.

Today, in the twenty-first century because of the innovations and development in the field of digital technology interactive publications are also available along with printed books. These interactive eBooks and ePubs are not taken into consideration for the study. Interactive publications are not static and they heavily influenced by animated elements. Such responsive designs adapt their layout as per the viewing environment i.e. electronic gadget e.g. mobile phone, tablet, Pc, and Laptop screen with a fluid grid.

There are many limitations in the study of the manuscripts and hence this researcher could not reach out up to every manuscript. The first reason is they are huge in number and are spread across the state. The second reason is they are in the collection of private or institutional guardianship. Therefore, the researcher thought of categorization of available manuscripts depending upon various layout, compositional styles and selected representative manuscripts for the study.

3.12 Method of Data Collection

The Objective of ‘The National Mission for Manuscript’, an ambitious project of Government of India, is to find out and preserve innumerable manuscript wealth of India. The Mission has identified and collaborated with prominent institutions with large holdings of manuscripts. These institutions are partner centers categorized under five zones: North, South, East, West, and Center. Major works done at these institutions are related cataloguing and microfilming to digitize manuscripts in their repositories. Through these institutions, the ‘Indira Gandhi National Centre for the Arts’ (IGNCA),
New Delhi made available catalogues of the manuscript repositories situated in every state of India. They are available on IGNCA website with the help of ‘The National Mission for Manuscript’ (http://www.ignca.nic.in/). This guided the researcher identify the list of the institutions from the West zone located in Maharashtra.

3.12.1 Sequence of Steps followed in Collecting Primary Data

Primary Data Collected from various libraries / repositories located in the state of Maharashtra, India.

1. The researcher initially identified the repositories, which has a collection of old handwritten manuscripts in Maharashtra and listed them.
2. Planned official visits to the libraries.
3. Library Work: First catalogues were screened and listed down the seventeenth century Devanagari Brahmanical manuscripts.
4. Later physically observed few manuscripts and studied thoroughly their layouts and designs in detail.
5. Photographed and photocopied pages of representative sample of selective manuscripts for study.

Table 3.1: List of Repositories for Manuscripts Collections in Maharashtra

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Anand Ashram Samasthan, Pune</td>
</tr>
<tr>
<td>2</td>
<td>Asiatic Society, Mumbai</td>
</tr>
<tr>
<td>3</td>
<td>Bhandarkar Oriental Research Institute (BORI), Pune</td>
</tr>
<tr>
<td>4</td>
<td>Bharat Itihas Samshodhak Mandal, Pune</td>
</tr>
<tr>
<td>5</td>
<td>Deccan College Post Graduate and Research Institute, Pune</td>
</tr>
<tr>
<td>6</td>
<td>Kavikulaguru Kalidas Sanskrit University, Nagpur</td>
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<tr>
<td>7</td>
<td>Mumbai University, Mumbai</td>
</tr>
<tr>
<td>8</td>
<td>Nagpur Central Museum, Nagpur</td>
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<tr>
<td>9</td>
<td>Chhatrapati Shivaji Maharaj Vastu Sangrahalaya, Mumbai</td>
</tr>
<tr>
<td>10</td>
<td>Samartha Vagdevata Mandir, Dhule Repository, Dhule</td>
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<tr>
<td>11</td>
<td>Savitribai Phule Pune University (Jaykar Library), Pune</td>
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<tr>
<td>12</td>
<td>Vedic Samsodhan Mandala, Pune</td>
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</tbody>
</table>
Table 3.2: List of the Seventeenth Century Devanagari Manuscripts at Various Libraries

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Resource Institution</th>
<th>Manuscripts Listed from Catalogue</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Anand Ashram Samasthan, Pune</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>Asiatic Society, Mumbai</td>
<td>23</td>
</tr>
<tr>
<td>3</td>
<td>Bhandarkar Oriental Research Institute (BORI), Pune</td>
<td>30</td>
</tr>
<tr>
<td>4</td>
<td>Bharat Itihas Samshodhak Mandal, Pune</td>
<td>99</td>
</tr>
<tr>
<td>5</td>
<td>Deccan College Post Graduate and Research Institute, Pune</td>
<td>51</td>
</tr>
<tr>
<td>6</td>
<td>Marathi Manuscript Center, (catalogue) Pune</td>
<td>7</td>
</tr>
<tr>
<td>7</td>
<td>Samarth Vagdevata Mandir, Dhule Repository</td>
<td>24</td>
</tr>
<tr>
<td>8</td>
<td>Savitribai Phule Pune University (Jaykar Library), Pune</td>
<td>4</td>
</tr>
<tr>
<td>9</td>
<td>Vedic Samsodhan Mandala, Pune</td>
<td>24</td>
</tr>
</tbody>
</table>

Total 274 Devanagari manuscripts of the seventeenth century listed down from various libraries of Maharashtra. Out of these data of 230 Devanagari Brahmanical manuscripts related to size and orientations of text on page have been recorded. Collected information, documented categorically such as library name, accession no., description, remarks.

Modern graphic design especially publication design related data collected from books in personal and institutional libraries, and web sources.

3.12.2 Secondary Data

Secondary data collected from various online sources, books, research articles, journals, etc. Online libraries such as British Library, Bouldien Library, Victor & Albert Museum, Jainepedia, etc. have a large collection of manuscripts.

Visual data regarding the sitting posture of Indian and people from other cultures collected from internet and museum/library websites.

3.13 Techniques of the Data Analysis

For content analysis representative manuscripts were selected, categorized under three theme based conceptual framework and design-related variables. These three themes are; (i) Form and function, (2) Composition and layout design, and (3) Layout styles and fundamentals of page layout principles. Visual inspection carried for variables identified under five building blocks. The manuscripts studied under these categories
using an amalgamation of techniques. These techniques are ‘Visual Representation’ and ‘Deconstruction’.

Visual representation constructed through digital diagrams. Visual thinking technique – practice-based method applied to explore and presented research finding (Gray and Malins, 2008, pp 103-107). Tool chosen is computer-aided visualization through diagrams. For every criterion different techniques were followed, are discussed in ‘Data Analysis and Interpretations’ chapter separately.

Content analysis technique is implemented through observation, practical, comparative and qualitative method. It enhanced the chances to discover similarities and differences among the visual elements of the seventeenth century Devanagari Brahmanical manuscripts and contemporary publication design. In addition, a code sheet developed to record observations regarding layouts and compositions. Coding coordinated in theory analysis, reveal framework of patterns. While analyzing the data and testing of the hypotheses qualitative method was followed.