Chapter 3

METHODOLOGY

This chapter deals with the description of method, procedure and tools adopted to fetch data and their analysis needed for the study. The quality and reliability of research findings and conclusion completely rely upon the research design, sampling technique, mode of data collection, data organization and their analysis. The present study was mixed method research, which incorporated case study, exploratory as well as experimental study. The various methods of research and tools for collection of data were selected as per the nature of the research, objective and data. The descriptive method was used to document *Mashru* in terms of its origin and history, significance, production process, colour, motifs, its meaning and significance, its placement and overall visual description. For description of designs and motifs, visual thinking approach were also used. The exploratory method was used to assess the existing situation of the craft in Patan and Bhuj in comparison to earlier done study. Experimental method with bricolage approach was used for new design and development. The various tools used for the collection of data were case study, questionnaire, observation, photography and videography. The entire study was planned under three phases. The detailed methodology adopted for the undertaken study as per the objectives are as follows:

3.1. Conceptual framework of the study

3.2. Research Design

3.3. Documentation of *Mashru* craft, its design & development, product diversification and analysis of market acceptability (it has been done under four phases)

Phase 1- Documentation of *Mashru* craft

3.3.1. Documentation of *Mashru* craft

3.3.1. I. Relevant literature collection for *Mashru* craft

3.3.1. II. Selection of locale of *Mashru* craft

3.3.1. III. Selection of sample

3.3.1. IV. Method, tools and technique of data collection

3.3.1. V. Pre-testing and validation of the tool

Phase 2- Design and development of new fabric in *Mashru*

3.3.2. Design and development of *Mashru* fabric

3.3.2. I. Collection of *Mashru* fabric swatches and images from various sources

3.3.2. II. Analysis of *Mashru* swatches and images in terms of color, yarn, motif, weave and pattern

3.3.2. III. Identification of design categories

3.3.2. IV. Survey and trend prediction

3.3.2. IV. A. Market and user survey for *Mashru*

3.3.2. IV. B. Trend prediction in textile and related products

3.3.2. V. Pilot Study

3.3.2. VI. Selection of categories for designing (stripe, *Ikat*, *Butti*)

3.3.2. VII. Selection of colour

3.3.2. VIII. Exploration of designs in stripes, *Ikat* and *Butti* and selection of raw material

3.3.2. VIII. 1. Exploration of designs in stripes, *Ikat* and *Butti*

3.3.2. VIII. 2. Selection of raw materials (for warp among Mulberry silk, *Tasar* silk, Korea silk, rayon and cotton)

3.3.2. VIII. 3. Selection of design based on raw materials (for warp among Mulberry silk, *Tasar* silk, Korea silk, rayon and cotton)

3.3.2. VIII. 4. Preparation of technical sheet

3.3.2. VIII. 5. Selection of weaver

3.3.2. VIII. 6. Sourcing and dyeing of yarn

3.3.2. VIII. 7. Preparation of harness (*Rach*), warping, loom setting and weaving of fabric

Phase 3-Product diversification

3.3.3. Product diversification of developed *Mashru* fabric

3.3.3. I. Understanding product & possibilities of *Mashru*

3.3.3. II. Selection of product as per fabric properties

3.3.3. III. Technique selection for fabric visualization on specific products

3.3.3. IV. Digital exploration of products

Phase 4 Analysis of market acceptability of developed fabrics

3.3.4. Assessment of market acceptability of developed *Mashru* fabric

3.3.4. I. Identification of variables for opinionnaire to understand acceptance of developed *Mashru* fabric

3.3.4. II. Preparation of questionnaire

3.3.4. III. Pre-testing of questionnaire

3.3.4. IV. Online survey of questionnaire

3.3.4. V. Application of statistical method for data analysis

Base line of the study

Gujarat is celebrated globally for its exquisite cultural heritage. It is home for several crafts like *Patola*, *Bandhani*, *Ajrakh*, *Ashawali* sarees, *Gharchola* sarees, *Kutchi* embroideries, bell metal, mud work, *Mata ni Pachedi*, leather craft, kutchi pottery and many more. The various craft forms practiced here since long have given it a unique cultural identity. In lieu of modernization and industrialization many crafts had been left behind. *Mashru* had undergone acute suffering during this phase. Till the mid of 1900, it was among the significant handloom textiles of our country. Liberalization of 1990s brought additional distress. It has brought irreversible decline for *Mashru*. In contemporary Indian history, *Mashru* is seen as an overlooked handloom craft of Gujarat. However, its demise started long back but became

clearly evident after 1990s. In several literature, it has also been referred as semi-precious brocade. *Mashru* is mainly practiced in Patan and Kutch-Bhuj at present. If we look at these places, they are quite popular for several crafts like *Patola* sarees, *Bandhni*, *Ajrakh*, *Kutchi* weaving, embroidery and many more; then why not *Mashru*? It has remained untouched in the course of development unlike other popular craft forms of the place or it has not adapted as per the change of time or hasn't identified its usage in modern world like other crafts. Actually, if it is observed meticulously; it is combination of Brocade and *Ikat* in satin weave. The two craft form in itself is quite unique, prodigious and popular; so, their fusion is definitely magnificent and at the same time demanding in terms of skill, time and effort. Being the daughter of handloom and Khadi product seller as well as trained as textile designer, researcher has always been surrounded by textiles since childhood. Researcher has always been keen to know about unique textiles of the state wherever she has lived. Being from the state of Bihar; *Tasar* or Korea silk has always held a distinctive place in researcher's choice, very often Bihar is said to be the abode of *Tasar* silk. After settling in Gujarat, the vibrant colors of state have been an attraction for the researcher. *Mashru* is such a handloom textile in itself which can be seen as a representative of vibrant Gujarat where all the colors of life have juxtaposed with each other. So, these two dots of the two states became the motivation behind this study. The current status of this craft was found to be a matter of distress. Why this magnificent craft is lagging behind? This fabric has immense potential to fetch economic benefit to its stake holders. Thus, effort was taken for new design and development in *Mashru* for its sustainability taking into account of lost techniques and material.

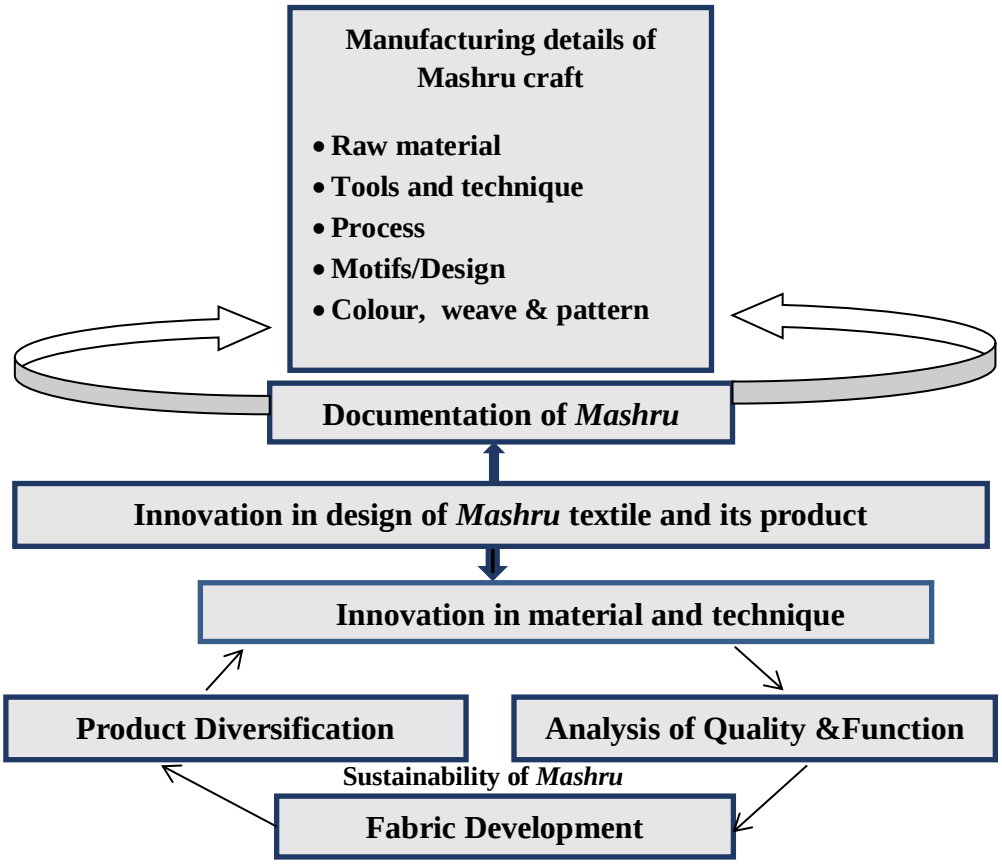


Figure 3.1: Conceptual Framework of the study

3.2. Research Design

Research design was planned according to objectives of the study, taking into consideration; availability and limitation of resources like time, finance, skill of artisans at various levels of work. Overall, the entire study was qualitative, descriptive in nature and mix of several methods i.e., case study, exploratory and experimental. The various methods were adopted according to the objectives of the study and nature of data. For analysis of designs and motifs visual thinking approach were also considered. For new design and development Bricolage approach of research were focused as during research it was difficult to control variables like attitude of artisan towards certain changes in making process. This has helped in developing pliability in disabling complications during study. At certain times plans too had been changed in order to move ahead and achieve objectives. During this journey researcher came across unexpected results like inapproachability of weaver during field work and sample development process, modification in design to work in restricted condition. During study, pre visualization has turned as an important tool in making order to understand the appearance of fabric. Also, for researcher to understand the style and nature of selected handloom fabric and what factors

should be suitable to play with. Overall, representation of data in visual form had been found very important during research for reflection, exploration, and analysis. The study started with descriptive approach to understand the situation of craft and identification of research gap. This was initiated with rigorous secondary study. During that it was found that there is not much information available related to various dimensions of the craft. Although during 1994 documentation of *Mashru* were done but in the past twenty-five years huge change has taken place in several contexts of the craft. As well as certain facets of *Mashru* like its visual organization and design categorization were not dealt much in detail. In addition to it, at present *Mashru* has turned into languishing craft, therefore design innovation was also identified as a strategic tool for the survival of the craft. So, in order to suffice these objectives, exploratory method was adopted to explore the reason behind history and origin of *Mashru*, its production process, reason behind the downfall of the craft & to explore the visual characteristics of craft. Then experimental study was carried out for design innovation to play with specific variables like color, weave, reed-pick, material and width according to the various end uses of *Mashru* fabric. Most important expected outcome of design innovation was to motivate them towards change, to be flexible, to respond in positive direction. As the study was about co designing rather than co creating so how it were designed became more important than what were designed. 'Innovation in designing of *Mashru* textiles' was one of the main objectives of the study –this necessitated employing creative skill of the artisans and rediscovering its techniques to reestablish its variegated charm. So, to convince them, to motivate them that they can do was very significant. Once they start adopting minor changes, they can takeoff *Mashru* tradition to greater height. Hence the entire process of making or to do became more important than what they have made.

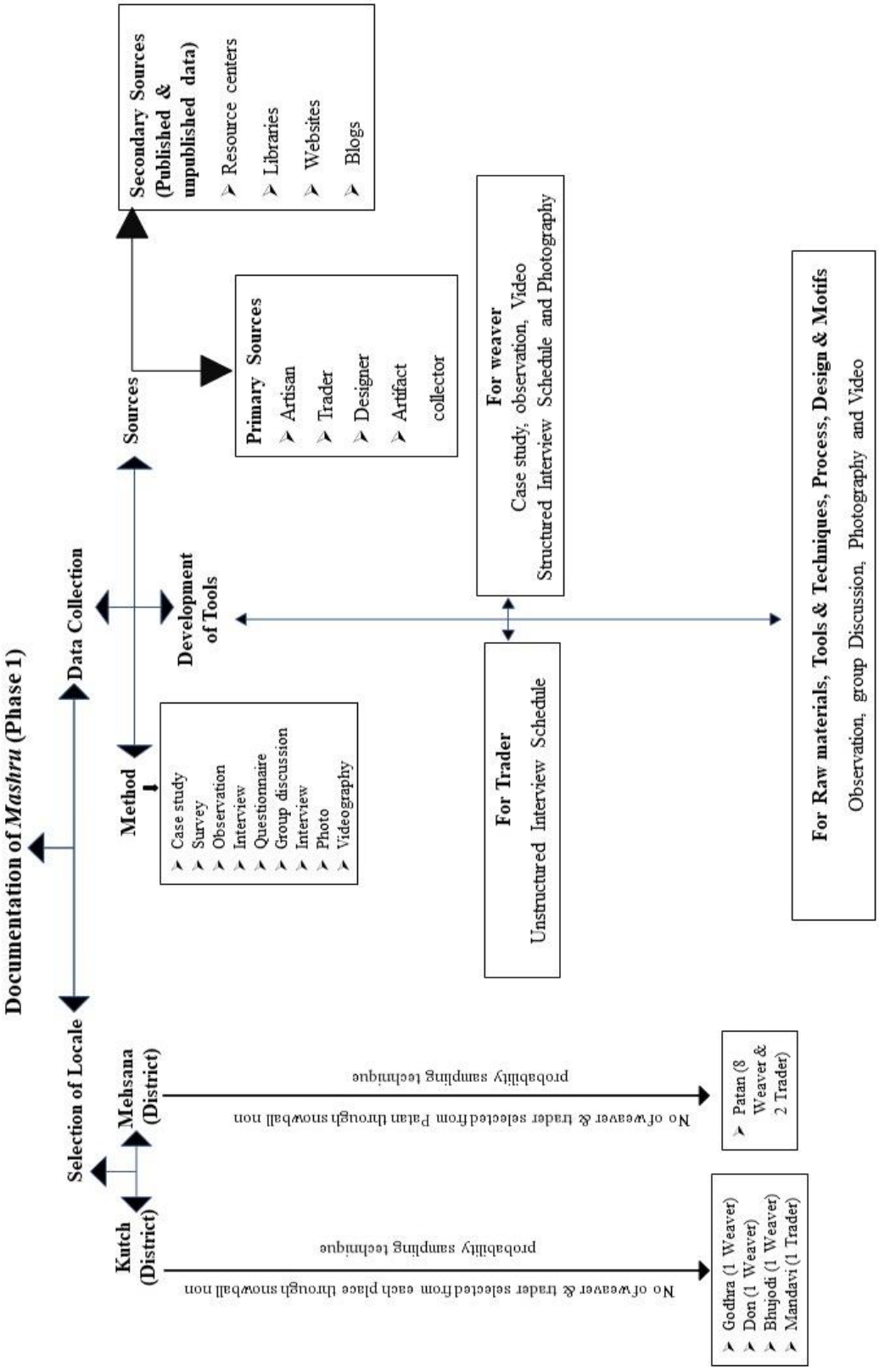
To accomplish above goals, entire work was carried under four phases (refer table 3.1). The first phase dealt with documentation of the craft which demanded literature survey and interaction with weavers, master weavers and traders. For this case study, survey, observation, questionnaire, interview, focus group discussion, photography and video tools were used to know about its history, traditional raw materials, techniques, designs, product and their changes. During this phase apart from observation; understanding emotions and emphatic skills were found significant to determine hidden facts. Building rapport with respondents was useful in enabling respondents to open up and in trust building. The second phase of the study dealt with design innovation which went through stages to enable fabric development. The various stages involved - collection of *Mashru* swatches and image from various sources, their analysis

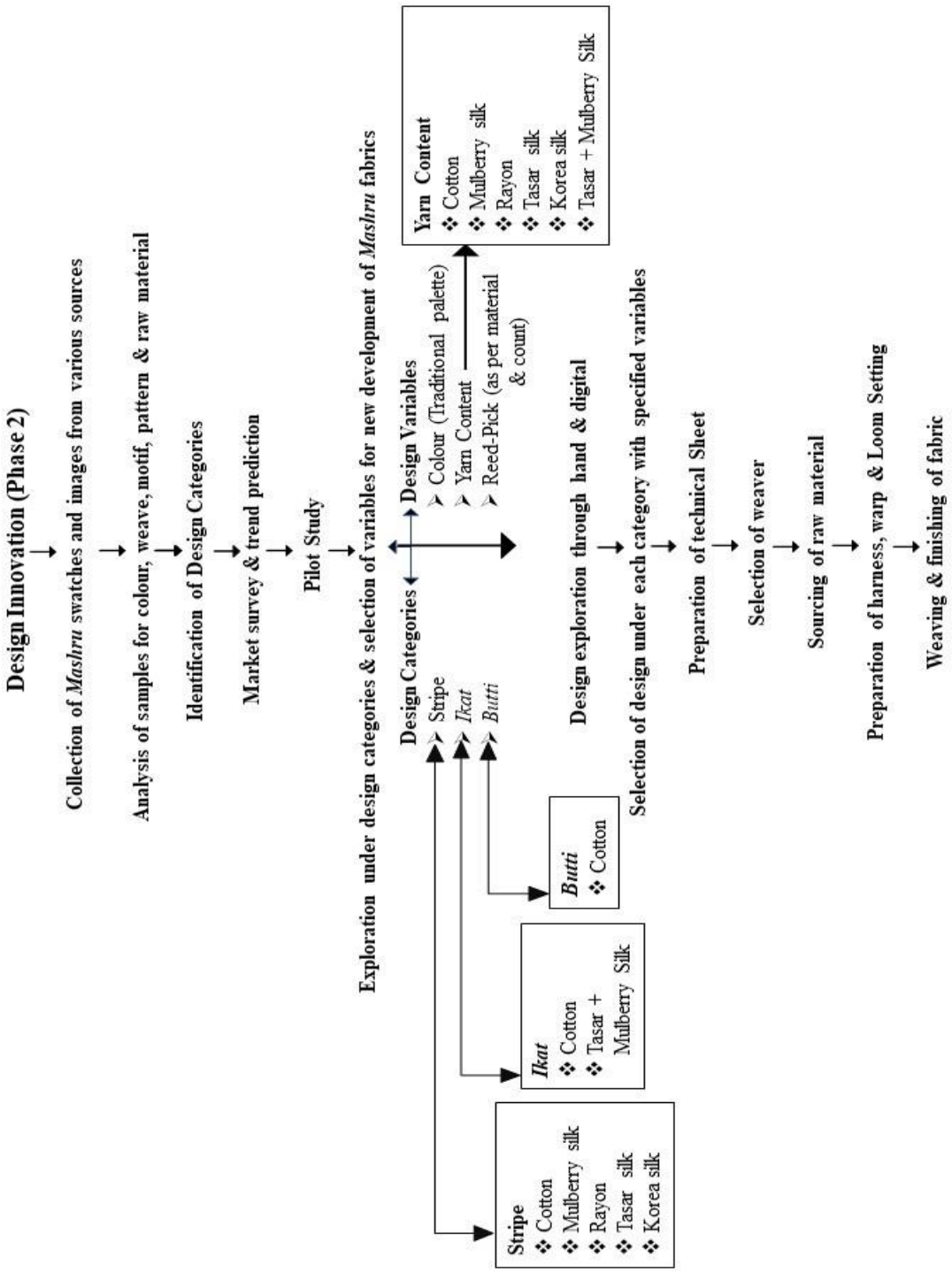
in term of colour, weave, motifs, repeat and raw materials, identification of design categories for design development, market survey, trend prediction, selection of variables, digital exploration of designs, selection of designs and then weaving. The third phase dealt with the product diversification where physical properties of the developed fabrics were studied in order to select various product lines as per required fabric properties. Later digital ideations of the products were explored from developed fabric. At last stage i.e., in the fourth phase assessment of market acceptability of developed fabric were done on various parameters through structured questionnaire. The questionnaire encompassed questions related to general understanding of craft, need of innovative designs, suitability of techniques, placement of stripes, *Ikat* and motifs, selection of colour, raw material (yarn), textural characteristics, price and overall aesthetic appeal of the developed fabrics. Thus, in above way research design were planned and executed to meet the objectives of the study.

Table 3.1: phases of Research Design

Research Design			
Phase 1	**Phase 2**	**Phase 3**	**Phase 4**
Documentation of *Mashru*	Design Innovation	Product Diversification	Analysis of acceptance of *Mashru* fabrics

Research Design




Design Innovation (Phase 2)
Collection of *Mashru* swatches and images from various sources
Analysis of samples for colour, weave, motif, pattern & raw material
Identification of Design Categories
Market survey & trend prediction
Pilot Study
Exploration under design categories & selection of variables for new development of *Mashru* fabrics
Design Categories
Stripe
Ikat
Butti
Design Variables
Colour (Traditional palette)
Yarn Content
Reed-Pick (as per material & count)
Yarn Content
Cotton
Mulberry silk
Rayon
Tasar silk
Korea silk
Tasar + Mulberry Silk
Design exploration through hand & digital
Selection of design under each category with specified variables
Preparation of technical Sheet
Selection of weaver
Sourcing of raw material
Preparation of harness, warp & Loom Setting
Weaving & finishing of fabric
Stripe
Cotton
Mulberry silk
Rayon
Tasar silk
Korea silk
Ikat
Cotton
Tasar + Mulberry Silk
Butti
Cotton

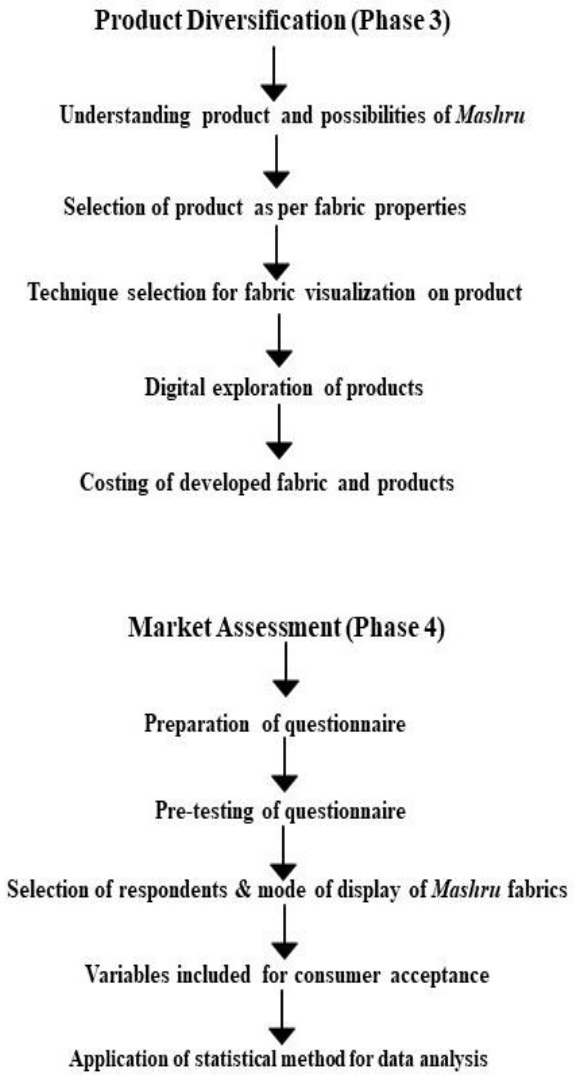


Figure 3.2: Research Design

Phase I- Documentation of *Mashru* Craft

3.3.1. I. Relevant literature collection for *Mashru* craft

Data related to the Origin and history, production process - raw materials, tools and techniques, designs – motifs, color, placement, layout, meaning and their significance were collected from various published and unpublished sources. List of visited libraries, resource centers and Museums for data collection are as follows:

- Hansa Mehta Library, The Maharaja Sayajirao University of Baroda (Vadodara)
- Library of Clothing and Textiles Department, Faculty of Family and Community Sciences, The Maharaja Sayajirao University of Baroda (Vadodara)

- Library of Maharaja Ranjitsinh Gaekwad Institute of Design, Faculty of Fine Arts, The Maharaja Sayajirao University of Baroda (Vadodara)
- Library of Faculty of Fine Arts, The Maharaja Sayajirao University of Baroda (Vadodara)
- Library of National Institute of Fashion Technology (Gandhinagar, Bhubaneshwar, Delhi)
- Library of National Institute of Design (Ahmedabad)
- Library of Aaina Mahal (Kutch-Bhuj)
- Weavers Service Centre (Ahmedabad, Bhubaneshwar)
- Calico Museum (Ahmedabad)

Apart from above center secondary data was also collected through virtual visit to Victoria and Albert Museum where detailed view of *Mashru* (*Mashroo*) samples along with their description had been mentioned.

3.3.1. II. Selection of locale of *Mashru* craft

From literature review, it was clear that earlier *Mashru* were practiced in many centers of the country, at present is practiced in Patan and Kutch-Bhuj of Gujarat only. For identifying districts and villages of *Mashru* production centers in Gujarat, PhD thesis titled "Traditional Woven Textiles of Gujarat – A Multidimensional Approach" written by Rashmi Kacker in 1994 were referred. Contact of few of the weavers of Patan was obtained from Gurjari office and contact of weavers of Kutch-Bhuj was obtained from Late Karsan Bhai who was an ex-employee at Hiralaxmi Craft Park Bhujodi. Apart from it a trader from Patan helped in identifying and locating weavers of Patan. In the 1st visit to Patan researcher met one Weaver 'Janak Bhai' who had been very helpful throughout the completion of the research. He extended his complete support in identifying weaver, dyer, *rach* maker, trader and NGO located over there and in Ahmedabad. The identified locations for *Mashru* weaving were Patan of Mehsana district and Mandavi, Don, Bhujodi and Godhra of Kutch district. Researcher visited all these locations to understand the current status of *Mashru* weaving of these regions as well as exploration and documentation of certain facets of the craft.

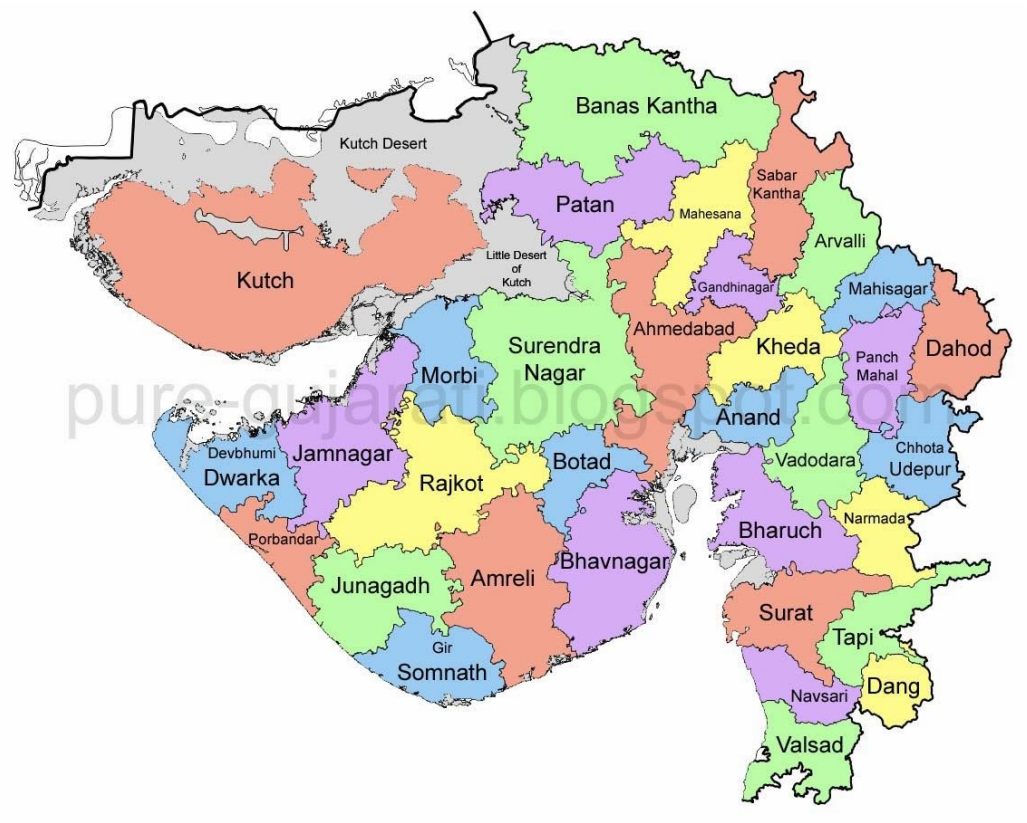


Plate 3.1 Map of Gujarat

Source:- https://4.bp.blogspot.com/-WF9xUoKlkLg/Vu_fQjwe7TI/AAAAAAAAAKc/KCbaaAir1i0jrWAXJxGFTj_oFYgFJxQ0A/s1600/New%2BGujarat%2BDistrict%2BMap%2BWith%2B7%2BNew%2BDistrict%2BCreated%2Bon%2B15th%2BAugust%2B2013.jpg

Plate 3.2Kutch in Map of Gujarat

Source: https://en.wikipedia.org/wiki/Kutch_district

Plate 3.3Patan in Map of Gujarat

Source: https://en.wikipedia.org/wiki/Patan_district#/media/File:Gujarat_Patan_district.png

Table 3.2: Locale of *Mashru* craft

Gujarat State	
Mehsana District	**Kutch District**
Patan	**Godhra, Don, Bhujodi, Mandavi**

3.3.1. III. Selection of sample

After identifying the locale of *Mashru* weaving, researcher personally visited all those places. From initial study, it was clear that number of weavers involved in it is very less and also in the study conducted by Rashmi Kacker in 1994 she has used snow ball sampling for weaver owing to the reason of less no of weaver involved in it. After 25 years of her study, it was observed as per information gathered from various sources that compared to that time number of artisans involved in it has reduced further. Hence, snow ball non probability sampling technique was adopted for procuring primary data for the study where weavers themselves helped in identifying other weavers. Total number of weavers in the sample was 14 where 10 weavers were from Patan and 4 were from Kutch.

- Sampling Method: Snow ball Non-Probability Sampling Technique
- Sample size: Sample consisted of 14 respondents, 4 from Kutch (1trader cum master weaver from Mandavi, 1 weaver from Godhra, 1 weaver from Bhujodi, 1 weaver from Don) and 8 weaver and 2 master weavers from Patan

- Specific characteristic feature of the sample: Sample has accompanied weavers from all the pockets of the *Mashru* production. It has also taken into consideration of involvement of both male and female weavers, artisans from both Hindu and Muslim community. In Patan under the selected list of samples; 2 master craftsmen were also selected. One of the artisans was a master craftsman of small level who has team of 4 members- he (Janak Bhai), his wife and 2 artisans who work on daily wages as per amount of fabric woven. There were 3 looms installed in his house and all the 4 people worked over there. The other included master craftsman is a trader cum master weaver who was one of the largest *Mashru* traders in Patan. He runs single loom at his home where female members of the family usually work and other weavers working under him works from their homes. They get raw material from him (master-weaver) and make fabric for him on the basis of certain charge. The trader included from Mandvi (Kutch-Bhuj) was a trader since long back. He was inherent *Mashru* trader.

Table 3.3: Detail of selected sample with locale and profession

Gujarat				
Patan	**Kutch**			
8 Weaver & 2 Master Craftsmen/Trader	**Godhra**	**Don**	**Bhujodi**	**Mandavi**
	1 Weaver	**1Weaver**	**1 Weaver**	**1 Trader**
	Inherent *Mashru* Artisan	**Inherent *Mashru* Artisan**	**Acquired *Mashru* Artisan**	**Inherent *Mashru* Trader**

3.3.1. IV. Methods of data collection

The data required for the study were mainly raised from primary and secondary sources. The primary information mainly comprised of data gathered from artisans, old artifact collectors, retailers, NGO working for craft through photographs and video graphs collected during field work. Secondary information comprised of data gathered from research articles, review articles, books and magazines, survey report of government, newsletter, blogs, websites and monographs. List of tools used for primary data collection with their detail and justification are under below table.

Table 3.4: Details of selected tool with description and rationale

Tools for data collection for primary study			
Sr. No.	**Selected Tool**	**Description of Tool**	**Rationale of Choice**
1	Interview Schedule	An interview schedule is list of structured questions intended to obtain data related to specific area of study.	Interview schedule was selected by the researcher due to qualitative and descriptive nature of data, low literacy level of the artisan as well as the language issue. Interview schedule comprised for several open and close ended questions pertaining to the nature of required data. Hence researcher personally met all the respondents to get complete opinion of the artisan.
2	Focus Group Discussion	It is a type of qualitative discussion involving people from similar background for specific topic of interest to deduce meaningful information.	It helped the researcher to set discussion among weaver, dyer and *Rach* maker to understand the possibility of exploration. During that time, it gave possibility of incremental change to bring innovation in *Mashru* craft.
3	Observation	It is a method of collecting data in natural setting related to people and process using all senses.	It helped in understanding the impulsive naturalistic behavior and response of the weaver. Many times, it was observed that the detail furnished by the artisan was different from what was visible, that is why it was incorporated as an important tool to understand the actual situation and to filter right information from the respondent. Along with this it also

			helped in better understanding of various stages associated with the *Mashru* weaving.
4	Case Study	It is in-depth study of any person or situation over a period of time.	It was employed for 2 respondents; one weaver master weaver from Patan and 1 weaver from Bhujodi in order to understand the craft profile in detail as they were into this profession for many years who have experienced the various phases of the craft in several contexts. It was found very helpful for the study to unravel certain hidden real situation facts about the craft.
5	Photography	It is very effective method of collecting visual information in still manner but acts as very solid base for analysis and interpretation.	Visuals communicate more than the words. It helped in capturing visual detail of the tools, their function, technique of production, motif and design. Any craft in itself is unique due to its visual differentiation and photography as a tool helped in capturing the visual content of the craft in precise manner. Furthermore, created visual bank of the craft were found very helpful in documentation and content validation in research writing.
6	Video	It is very effective for in-depth recording of process and in validating and presenting data	Limitation found in the photography was overcome by video graph. It helped in recording and understanding through detail about the process involved in production as well as in recording discussion and in

			understanding the ethnographic detail of the locality.

3.3.1. V. Pre-Testing and Validation of Tool

Prepared interview schedule was given to experts of related field to check the validity of the questions. Later modifications were done on the basis of feedback given by the experts. To check the reliability of the tool, Test-Retest method was adopted. Initially 7 respondents were interviewed during September 2014 and again after 2 months, the same respondents were re-interviewed to check the differences in the answer. After the comparative analysis of answers, few of the questions were reframed to bring clarity to the respondent. The interview schedule was found to be reliable. It comprised of combination of close and open-ended questions depending upon the nature of data. The interview schedule has focused upon following major areas:

- Craft Profile (type of house, involvement of family members in various processes, whether acquired or traditional occupation, role of trader, difference in role of trader in Kutch-Bhuj and Patan, involvement of family members in weaving, distribution of looms in weaver's households)
- Manufacturing details (making of hanks, dyeing of hanks, mending damaged yarns, sizing the warp yarns, *Rach* preparation (shaft preparation & denting), installation of *Rach* on loom, winding and weaving, finishing the woven fabric, tool and equipment used throughout manufacturing process, colors and designs, marketing, products made out of it, their customers, details of yarns used in weaving in both centers)
- Marketing Practices

To collect above data researcher visited all the selected villages and town personally, the questions were asked in Hindi and Gujarati to make them understand clearly and then responses were translated into English. While interview with the respondents, researcher also kept observing their houses, weaving method and about overall craft profile to avoid difference of data.

Plate 3.4 Researcher conducting interview with *Mashru* weavers of Kutch

Plate 3.5 Researcher conducting interview with master weaver and trader/ master weaver of Patan

Phase 2- Design and development of new fabric in *Mashru*

3.3.2. Design and development of new *Mashru* fabric

3.3.2. I. Collection of *Mashru* fabric swatches and image from various sources

The 2nd phase of design and development started with the sourcing of *Mashru* fabric and its image. Initially researcher observed samples in textile museum of Clothing and Textiles Department of The Maharaja Sayajirao University of Baroda and also got few samples in form of garment and yardage from Dr. Anjali Karolia. This turned as the takeoff point for the researcher in identifying and sourcing right samples. Researcher collected samples from traders, weavers, master weavers, shop keepers, private artifact collectors and exhibitors of *Mashru* from Patan, Kutch-Bhuj, Baroda and Ahmedabad. A huge number of samples from Patan were collected from Janak Bhai-a master weaver, in Mandvi from Mamtora family-inherent *Mashru* trader and in Bhuj city from Wazir family-collector of artifacts as well as from a popular retail shop in Bhuj named Mulchand Kacharawala. Sourcing of samples helped in developing a repository which later acted as foundation in understanding techniques, visual

organization, colour and pattern of the *Mashru* fabric for design and development of new designs.

Plate 3.6 Researcher sourcing *Mashru* samples from retailers and weaver

3.3.2. II. Analysis of *Mashru* swatches and images in terms of color, motif, weave and pattern

Analysis of sample was a crucial task to understand the technical detail as well as visual language of the fabric. It was carried out in two ways, the 1st was visual analysis which dealt with color, motif and pattern, visual appeal and the 2nd was technical analysis which dealt with raw material, weave, count of warp-weft, reed-pick, weight and width of fabric.

Visual Analysis: Visual analysis helped in understanding and decoding the striking characteristics feature of fabric, it was repetition of certain color palette, motif and its specific layout. It was mainly a striped fabric, where Stripes had been customarily found either in multicolor band placed next to each other or as single colored base separated by thin and thick lines of other colors. Along with regular stripes, occasionally *Ikat* patterns, small floral and geometrical motifs *(Buttis)* were also accompanied in the base. *Buttis* were usually found in vertical band or in block pattern throughout the surface creating a sense of balance and uniformity.

Although satin has been used in many other brocade varieties, the use of pure, vibrant and undiluted stripes in satin gave *Mashru* characteristics feature and made it to stand out as a unique handloom craft. The most commonly observed color in warp were variations of red, yellow and green. Other used colours were black, ochre, magenta, dark pink, brown etc. In

weft usually red, cream, almond, off white, light yellow and light ochre were found. Overall, the representation of designs was found in simple to complex pattern.

Technical Analysis: It helped in understanding the basic construction of the fabric. *Mashru* fabric primarily comprised of satin weave along with variations of twill like broken twill and reverse twill. Others secondary weaves analyzed weaves were rib, supplementary warp and weft. Because of satin weave and silk in warp resultant fabric were found very lustrous. Supplementary warp and weft used for motifs were usually found in coarser yarn count. The back of the fabric comprised of cotton weft keeping the silk warp intact for glossy face.

3.3.2. III. Identification of design categories of *Mashru*

After analyzing the designs of *Mashru*, it was found that there were three major categories on the basis of technical and visual analysis which are as follows:

- Striped *Mashru*
- *Ikat Mashru*
- *Butti Mashru*

Striped *Mashru*: It was the most conventional, commonly found category of *Mashru*, practiced maximum till today, simplest in its making process with lesser number of shafts among all varieties of *Mashru*. It was characterized by unique combination of multicolor vertical bands.

Plate 3.7 Image showing designs of striped *Mashru*

Ikat *Mashru*: It was the rarest category of *Mashru*, practiced no more today, quite complex in its making process although lesser number of shafts like striped variety of *Mashru* were needed. It was characterized by unique warp *Ikats stripes* with or without combination of multicolor vertical bands. The complexity of the design lied in the resist tie-dyed pattern of warp.

Plate 3. 8. Image showing designs of *Ikat Mashru* (Source: Hatanka, 1996)

Plate 3.9. Image showing designs of *Ikat Mashru* sourced during field visit

***Butti Mashru*:** It was among the rare variety of *Mashru* which were hardly made at present except *Danedar* and *Saatdhani*. Its designs were quite complex in terms of weave which

utilized maximum number of shafts among all varieties of *Mashru*. It was characterized by unique placement of small to medium size of *Buti*.

Plate 3.10 Image showing designs of *Butti Mashru*

3.3.2. IV Survey and trend prediction

3.3.2. IV. A. Market and user survey for *Mashru*:

For this mainly survey tool was adopted to collect required data from various master weavers, weavers, traders, retail outlets and exhibition. This method gave first hand data as well as facilitated researcher to directly interact, understand and observe them. Market survey were carried out in different areas of Baroda (Alkapuri, Old Padra road, Nawa Bazar), Bhuj, Patan and Ahmedabad (Aashram road, S. G. road). For exhibitions - Craft Root exhibition held at Surya Palace, Vasantotsav craft and design festival held at MRID GulabBaug, Craft exhibition organized under International Textile and Costume Congress held at Surya Palace of Baroda were covered for survey. In addition to this, online platform like 'Gaatha' (**https://shop.gaatha.com**), 'Mashru – Sub Trade' (**https://craftofgujarat.gujarat.gov.in**), 'Khamir' (**https://www.khamir.org**) were also observed to understand the consumer demand. During visit, concurrently random informal interview were carried out with manufacturer and retailer. Further for user study, researcher interacted with the users of various segments, who had either used the fabric earlier or were willing to use in order to understand the taste of target market, their range/buying capacity, how often do they buy or use the product, their behavior

and lifestyle and its potential impact on the design and development process of *Mashru* fabric. Overall, market survey and user study were carried out to understand from various stakeholders of *Mashru* about type of products, nature of products like bright, bold, premium, light & local etc., consumer profile like rural, local, tribal, urban, elite, semi-rural, and semi-urban.

Plate 3.11 Image showing survey for *Mashru*

3.3.2. IV. B. Trend prediction in textile and related products

For this, researcher studied secondary sources, brands-review, press release, declaration, iconic public image, blogs and ventures involved in selling, promoting and in using *Mashru*. It was done with informal interview with potential users.

Likewise, researcher also observed contemporized use of *Mashru* and trends in textile and related products to understand, how it has been and can be linked with *Mashru*. The gathered information was critically analyzed which were found very useful for the designing phase.

3.3.2. V. Pilot study

Collected *Mashru* motifs, patterns and techniques were critically analyzed from the angle of possibility. To what extent existing infrastructure, skill and willingness of the artisans (*rach* maker, dyer, and weaver) matches the possibility of executing traditional techniques of weaving and surface development like stripe pattern, *Buttis*, supplementary warp, weft, and *Ikat* at present. During study it was found that since long time weavers were only making stripe and dotted design, therefore it was not easy to convince them about the possibility of various techniques and designs. In addition to it, since past many decades, they had been working with

rayon (in Patan) and cotton (in Kutch) only so this had also restricted their inclination and aptitude to work with silk (mulberry), one of the most important traditional raw materials of *Mashru*. Researcher convinced artisans and simultaneously also observed those artisans who were convinced easily compared to others. In terms of infrastructure, there were fewer barriers in execution compared to willingness of artisans and their competency to work in different materials, techniques and designs. Overall, stripe designs were found to be most possible compared to *Ikat* and *Butti Mashru*.

3.3.2. VI. Selection of categories for designing (stripe, *Ikat, Butti*)

Looking into the aesthetics and need of resurgence of traditional techniques, designs and contemporary requirement; researcher decided to go with the identified *Mashru* categories i.e., Stripe, Ikat and *Butti*. The wide ranges of category were intended to give enormous prospect to design exploration as well as application. It was targeted for diversified product category along with conventional *Mashru* products. Overall, the entire idea was to include more possible potential users along with existing one.

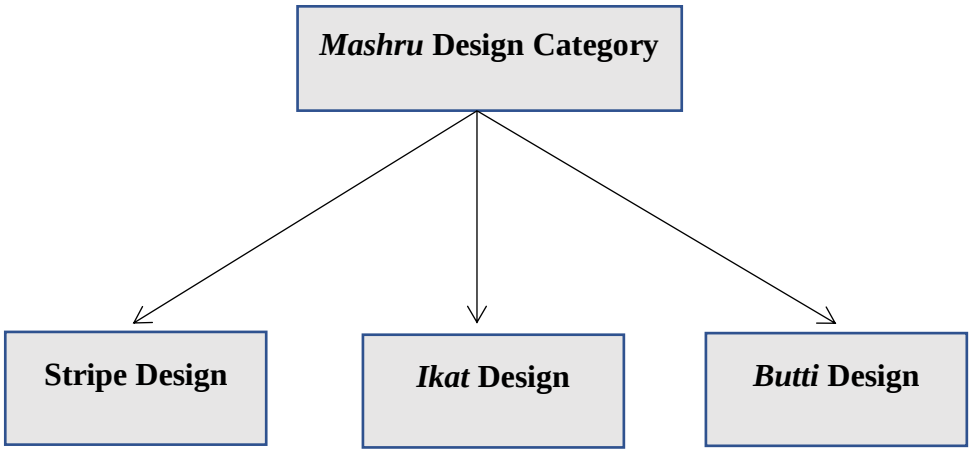


Figure 3.3: *Mashru* design category

3.3.2. VII. Selection of Colour

The selection of color in each design was limited to the traditional palette. Color was one of the most striking characteristics features of *Mashru*. *Mashru* has been ever known by its bright colors placed in vertical bands; changing in it will alter the identity of craft. Satin as a weave had been widely used in power loom as well as in few other handloom fabrics, hence researcher considered it very critical to adhere to the traditional color palette. To understand the role of color in *Mashru* in detail, researcher initially explored few digital designs as per forecast but it

landed up somewhere else, visual identity was no more of *Mashru* whereas when researcher explored with traditional palette, the aesthetics and identity of craft were found intact.

3.3.2. VIII. Exploration of designs in stripes, *Ikat* and *Butti* and selection of raw material

3.3.2. VIII. 1. Exploration of designs in stripes, *Ikat* and *Butti*

After the selection of colour; designs in stripes, *Ikat* and *Butti* were explored. In exploration of designs, commonly repetitive design elements of traditional *Mashru* fabric like *Kakadi*, *Kataria Khajuri* and undiluted dyed stripe patterns were taken into consideration. Initial exploration started with free hand drawing and colouring. The basic idea behind this was unrestricted exploration of various thickness of band of colors and to make this journey more experiential. Simple tools and aids enabled free flow of creativity, deeper involvement, and instant depiction of idea. At this stage researcher made few patterns in stripes. To bring variation in design; concepts like half and half, thin stripes, thick stripes, combination of thin and thick stripes and broader repeat patterns were explored. Once the basic ideas of designs were gained, it was explored using coloured paper strips for quick simulation, modification and variation. Finally, it was explored using CAD (Computer Aided Design) for precise color and weave effect. Similarly, for *Ikats* researcher relied upon sourced samples and photographs collected during visit as well as on secondary sources images. This helped in understanding the kind of *Ikat* that had been traditionally used in *Mashru* and that became the basis for exploration of designs. Traditional chevron pattern with one or two colours were explored in various colour and pattern from hand to digital aids. For *Butti Mashru* also traditional motifs of the *Mashru* were obtained from the samples sourced during survey. Although number of *Mashru* sample with motifs were insufficient due to rare availability, so researcher also relied upon the photographs of *Mashru* found in books as well as photographs collected from various resource centers. Along with it, monuments in the surroundings of locale of the study were also studied from inspiration Point of view. During study similarity of many old *Mashru* motifs were found with those of monument (*Rani ni vav*) carvings. Hence, it was also considered in design exploration where it could fetch more of local touch of the place in the craft. In addition to relying upon existing motifs and monuments researcher also explored new motifs that can fit into the traditional *Mashru* motif language. Designs were explored freehand as well as digitally in various colour, pattern and layout.

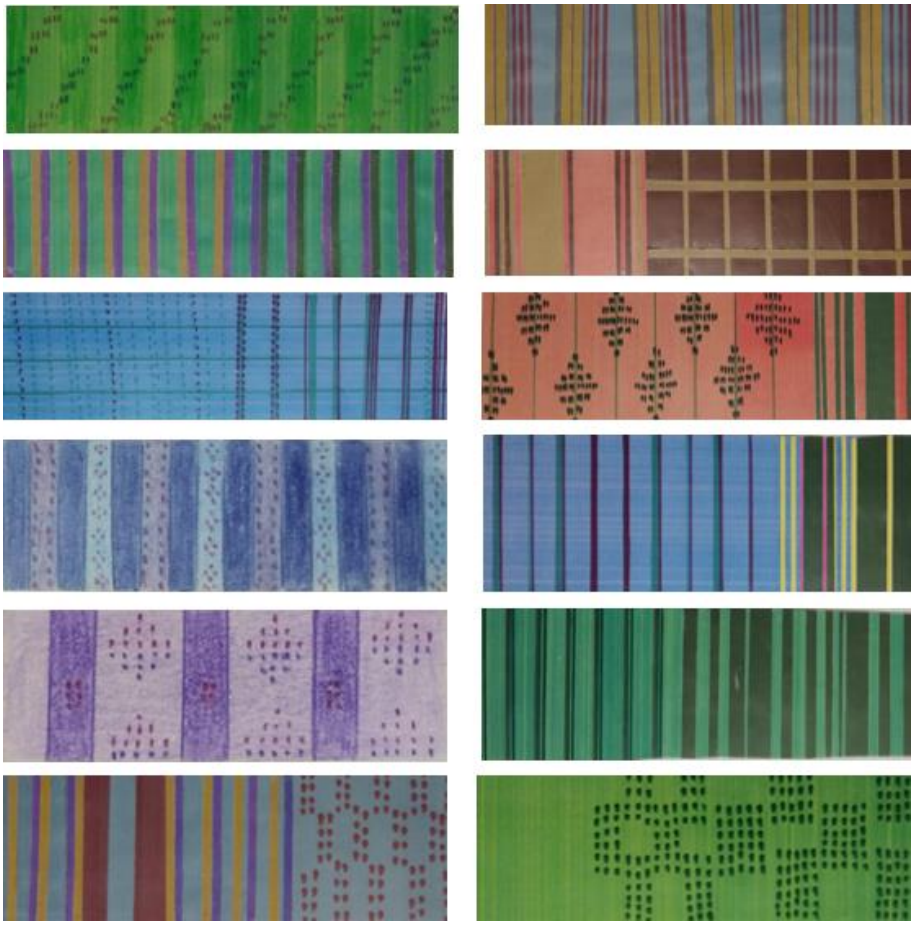


Plate 3.12 Initial hands-on exploration of *Mashru* designs

3.3.2. VIII. 2. Selection of raw materials (for warp among mulberry silk, tasar silk, Korea silk, art silk - rayon and cotton)

After exploration of designs, the selected design categories were further linked to various raw materials to be used in warp. Discussions with weavers were done about selection of material as it had linkage to market survey as well as they were the one to weave samples further. The varied selected raw materials were mulberry silk, *Tasar* silk, Korea silk; their combination or alone, rayon and cotton. Most of these materials were considered for stripe category due to its easy handling by weavers as well as stripes being the most popular design element for *Mashru*. Cotton were subjected to *Butti Mashru*; *Tasar* & Mulberry silk combination and cotton were subjected for *Ikat Mashru*. Each warp exhibited unique textural features, adding variegated charm to *Mashru*. For weft - cotton were constant among all warp yarn content to adhere the philosophy behind origin of *Mashru*.

Table 3.5: Details of design category with raw material

Detail of Design category 1- stripe with raw material				
Rayon warp with cotton weft	Mulberry Silk warp with cotton weft	cotton warp with cotton weft	Tasar Silk warp with cotton weft	Korea silk warp with cotton weft
Detail of Design category 2 - *Ikat* with raw material				
Mulberry and Tasar Silk warp combination where Tasar incorporated in *Ikat* and Mulberry in solid-colored stripes with cotton weft				cotton warp with cotton weft
Detail of Design category 3 - *Butti* with raw material				
Butti Mashru in complete cotton warp with cotton weft				

3.3.2. VIII. 3. Selection of design based on raw materials (for warp among mulberry silk, tasar silk, Korea silk, art silk - rayon and cotton)

The selections of designs were carried out in very informal way. For this the different layouts were displayed according to designs and expert from related field were asked for their preference on spot after brief description of undertaken study. It was carried out through focused group discussion as well as one to one discussion. The design preferences were analyzed in percent and frequency. The experts included for this were faculties, students, weavers, potential buyers and retailers of related field. Later selected designs were translated according to each material. The selected design in each category with number and description are as follows:

Category-1, Stripe *Mashru*, Design-1	Rayon (art silk) warp & cotton weft	D. Half and half pattern in traditional colours, Stripe *Mashru* category, 21 (refer appendix 3)
Category-1, Stripe *Mashru*, Design-2	Mulberry silk warp & cotton weft	D. Half and half pattern in traditional colours, Stripe *Mashru* category, 27 (refer appendix 3)
Category-1, Stripe *Mashru*, Design-3	Cotton warp & cotton weft	D. Half and half pattern in traditional colours, Stripe *Mashru* category, 25 (refer appendix 3)

Category-1, Stripe *Mashru*, Design-4	Korea silk warp & cotton weft	D. Half and half pattern in traditional colours, Stripe *Mashru* category, 15, (refer appendix 3)
Category-1, Stripe *Mashru*, Design-5	Tasar silk warp & cotton weft	D. Half and half pattern in traditional colours, Stripe *Mashru* category, 16, (refer appendix 3)
Category-2, *Ikat Mashru*, Design-6	Mulberry-tasar warp & cotton weft	G. *Ikat Mashru*, *Ikat Mashru* category, 69 (refer appendix 3)
Category-2, *Ikat Mashru*, Design-7	Cotton warp & Cotton weft	G. *Ikat Mashru*, *Ikat Mashru* category, 46 (refer appendix 3)
Category-3, *Butti Mashru*, Design-8	Cotton warp & Cotton weft	I. *Butti* without stripes, *Butti Mashru* category, 81 (refer appendix 3)

3.3.2. VIII. 4. Preparation of technical sheet

After the selection of designs, the technical sheets were prepared as per material used and the expected quality of products. Here, researcher has tried to play with the varying thickness of fabric for wider application possibility. The raw material in each category were different, therefore technical specification were determined according to that. After the finalization of colours, placement of motifs and pattern; it was transferred on graph paper. Placement and size of motifs were worked according to number of available harnesses. Width of the selected fabrics ranged from 24-48 inches. At last, drafting, denting, peg plan, and treadle-order were calculated.

Table 3.6: Details of designs with reed number and denting order

Design category with raw material	Yarn Count	Fabric width	Reed number	Denting order
Rayon stripe	120 D	36 Inches	66	4
Mulberry stripe	60-66 D	36 Inches	66	8
Cotton stripe	80/2	48 Inches	60	3,4
Korea silk stripe	33-37 D	36 Inches	66	4
Tasar stripe	50-60 D	36 Inches	66	4
Tasar + Mulberry *Ikat*	60-66 D & 50-60 D	36 Inches	66	4
Cotton *Ikat*	80/2 Ne	36 Inches	66	4
Cotton *Butti*	80/2 Ne	24 Inches	60	2

3.3.2. VIII. 5. Selection of weaver

Selection of the weaver dependent upon the willingness as well as skill of the weaver, as there had been six warp materials involved, it was difficult to handle all set of yarn by single weaver. Among all rayon and cotton were most easily manageable, as artisans of Patan and Kutch-Bhuj had been using it since long whereas other warps like mulberry silk, tasar silk, and Korea silk was difficult for the weavers of both the regions. There was only one artisan in Patan who used to weave in mulberry silk occasionally on the basis of order, therefore researcher approached him and he agreed for that. Other major challenge was *Tasar* and *Korea* silk weaving as the material was completely new to this place. For *Tasar Mashru*, one of the artisans in Kutch-Bhuj agreed; but the output was not satisfactory. Hence, again the same artisan of Patan who agreed for mulberry silk *Mashru* was convinced for it and he agreed for it on trial basis and that worked. Later, Korea silk sample was also given to the same weaver. Along with material extra weft and *Ikat* was also challenge for them as it was an obsolete technique for both the centers. However, again one weaver from Patan and one from Bhujodi were convinced for *Ikat* and extra weft *Mashru* sample weaving. Selection of weaver and convincing them to work with varied material and technique had been a tedious task for *Mashru* weaving.

Table 3.7: Details of *Mashru* design & place of weaving

***Mashru* Design**	**Place of weaving**
Cotton warp & cotton weft stripe design	Bhujodi
Mulberry warp & cotton weft stripe design	Patan
Tasar warp & cotton weft stripe design	Patan
Rayon warp & cotton weft stripe design	Patan
Korea silk warp & cotton weft stripe design	Patan
Mulberry & Tasar silk warp & cotton weft *Ikat* design	Patan
Cotton warp & cotton weft *Ikat* design	Patan
Cotton warp & cotton weft *Butti* design	Bhujodi

3.3.2. VIII. A. 6. Sourcing and dyeing of yarns

After the selection of weaver for designs of each category, researcher started sourcing materials for it. Market survey was done in Patan and Bhuj for variations of all warps: rayon, mulberry, cotton, tasar and Korea silk. Rayon and cotton were sourced locally from Patan and Bhuj and later Mulberry silk were sourced from Bengluru and Nuapatna (Orissa), tasar silk were sourced from Bhagalpur of Bihar and Nuapatna of Orissa, Korea silk were procured from Nuapatna of Orissa, were procured from Bhuj. Dyeing of mulberry silk was done in Bengluru and Nuapatna; of *Tasar* silk in Bhagalpur and Nuapatna and of Korea silk in Nuapatna. Resist dye of Tasar silk were done in Surendranagar of Gujarat and of cotton in Nuapatna.

Table 3.8: Details of yarn sourcing & dyeing place

Yarn content	**Place of Sourcing**	**Place of dyeing**
Cotton	Bhuj, Patan	Locally in Kutch-Bhuj & Patan
Rayon	Patan	Locally at Patan
Mulberry silk	Bangalore	Bangalore
Korea silk	Nuapatna (Orissa)	Nuapatna (Orissa)
Tasar silk	Bhagalpur (Bihar)	Bhagalpur (Bihar) & resist dyeing at Surendra Nagar, Gujarat

3.3.2. VIII. 7. Preparation of harness (*Rach*), warping, loom setting and weaving of fabric

In Patan there were only two *Rach* makers, one of them selected for this purpose. Researcher first understood their calculation method of *Rach* preparation with the help of weaver and *Rach* maker and then tried to make him understand its preparation as per weave, repeat pattern and denting order. However, in Bhuj most of the weavers were preparing *Rach* on their own. The prepared *Rach*, was installed on the loom, prepared warp was attached to it, loom was set with required treadles and yarns in proper tension to carryout weaving.

Phase 3- Product diversification

3.3.3. I. Understanding product and possibilities of *Mashru*

Understanding product and possibilities of *Mashru* was helpful to understand its multiple affordances. It was done by exploring its traditional and contemporary products through secondary and primary sources to recognize its diverse areas of application which *Mashru* had gone through as well as to know customer's perspective.

3.3.3. II. Selection of product as per fabric properties

Understandings of physical properties of fabric are very significant to understand function and performance of a fabric as per its subjected end use. It helps in defining visual characteristics, utility characteristics, durability characteristics, and production working characteristics of product to be developed & its maintenance requirement. Researcher analyzed it in terms of fabric hand feel, texture, drape, fabric thickness, pattern, width and colour. Taking these points into consideration researcher selected few end uses which were suitable as per the fabric characteristics as well as the novelty in the product application. The selected lists of products are as follows:

- Home furnishing
- Bed Spreads
- Cushion and pillow cover
- Table cloth, Table Runner and Mats
- Lifestyle Accessories
- Garments

3.3.3. III. Technique selection for fabric visualization on product

Technique selection was done to understand possibility and benefit of digital rendering. How leveraging technology for this can be helpful in fabric draping, visualizing garments on models and furnishing in varied setting with essential prop without actually getting them stitched and fabricated.

3.3.3. IV. Digital exploration of products

After understanding of fabric features and its connection with intended products digital ideation of products were done. In exploration of products researcher tried various layouts in single fabric, mix and match, patch, appliqué etc.

3.3.3. V. Costing of developed fabric and products

Researcher calculated the sampling charge of all developed fabric wherein raw material cost, freight charges, processing charges, wages at every stage of production, finishing charges and concept charge were included. Overall, the costs of various samples were influenced by material, making and level of intricacy.

Phase 4 Assessment of market acceptability of developed fabrics

3.3.4. I. Preparation of questionnaire

The fourth phase of the study included the evaluation of market acceptability of developed fabric. To accomplish this objective, researcher started with development of structured questionnaire taking into consideration related variables. The tool was developed using Google form. The developed tool mainly comprised of open and close ended statements with some statements stimulating multiple responses. Depending upon the nature of question; researcher developed three- and five-point Likert scale consisting of multiple responses varying in certain order and intensity to express the required attributes of the developed fabric/product. Questionnaire consisted of questions concerning to aptness of colour combination, motif, technique, material, cost, placement of motifs/stripe/*Ikat* as well as overall aesthetic appeal. Developed three- and five-point scale are as follows:

Table 3.9: Three-point scale

Rank	Highly Appealing/Strongly Agree/Excellent	Appealing/Agree/Good	Not Appealing/ Disagree/Average
Score	3	2	1

Table 3.10: Five-point scale

Rank	Strongly Agree/ Excellent/Excellent	Agree/Very good/Good	Neutral/ Good/Fair	Disagree/ Average/ Average	Strongly Disagree/ Poor/Poor
Score	5	4	3	2	1

To understand price of developed *Mashru* fabrics as per value of craft, five-point Likert Scale with below statements were used.

Table 3.11: Five-point scale for cost

Rank	Very Reasonable	Reasonable	Reasonable for few	Not at all	Cannot say
Score	5	4	3	2	1

3.3.4. II. Pre-testing of questionnaire

The developed structured questionnaire was given to three experts of different discipline for content validity. Later to check the reliability of tool, Test-retest method was adopted. For this, sample of 30 respondents were selected randomly from various categories – gender, age group, occupation, educational qualification and income. Questionnaire were sent to respondents via email and WhatsApp. They were personally called to explain the objective of undertaken research study and the need of their valuable response. Researcher coordinated with the respondents during filling of responses and guided them at the stage of any complexity in

understanding of questions. Recorded responses were analyzed and corrections were made where respondent faced trouble in understanding.

3.3.4. III. Selection of locale and sample for exhibition of developed *Mashru* fabric and administration of questionnaire

Initially researcher planned for Patan, Bhuj, Vadodara and Bhubaneshwar for the display of products, reason being that Patan and Bhuj were center of production of *Mashru* fabric as well as a hub for handloom product and craft tourism; Vadodara being the cultural capital of Gujarat and revered place for handloom and handicraft products, similarly Bhubaneshwar also being the capital of Orissa, a revered place for craft hub and craft tourism as well as place quite acquainted and inclined towards silk weaving and Ikat technique of production.

However, due to unavoidable circumstances aroused due to COVID 19 pandemic, certain changes were made. The schedule was prepared using google form as well as developed fabrics were displayed digitally and hence it were administered digitally. Researcher also shared contact number and email with respondents to contact in case of any query. Now, Place was not a limitation as responses were to be collected digitally. This approach gave the opportunity to capture their responses from several parts of the country as well as make people aware about *Mashru* on broader basis. Responses were targeted from both the genders because *Mashru* fabric were extensively found to be used by both the gender in different forms. Respondents primarily comprised of faculties, design students, home maker, design professionals, textile engineers, fashion, textile and costume designers.

3.3.4. III. A. Acceptance by consumers

The common consumers included in this study were those who were aware about handloom products but not necessarily about the various techniques. This was useful to capture the view of respondents purely from consumer point of view rather than the used technique.

3.3.4. III. B. Acceptance by Textile experts

The textile experts mainly included in this were those involved in production or sale of handloom fabrics or those textile professionals who had knowledge about the production process and technique. The reason behind the selection of these experts was that as they are acquainted with the process, difference of techniques, hardship, craftsmanship and time consumption involved in it and can understand its impact on cost and value.

3.3.4. IV. Variables included for consumer acceptance

Variables refer to those attributes which fluctuates. An independent variable is that variable which cannot be affected by other variables and act as a precursor for dependent variables. Dependent variable is that variable which is affected by independent variable, any change in independent variable brings change in dependent variables. The selected independent and dependent variable to study consumer acceptance by the researcher were as follows:

Independent variables:

1. Technique

2. Raw material

3. Colour

Dependent variables:

1. Design

2. Aesthetics

3. Cost of *Mashru* fabrics

4. Use

3.3.4. V. Application of statistical method for data analysis

Data collected through questionnaire were tabulated in systematic & logical manner using Excel 2010 for comparative analysis. Later, percentage were used as statistical tool for data analysis as well to represent it in form of stacked bar graph. Stacked bar graph was taken to show percentagewise comparative differences of opinion between segregated/selected categories of respondents like male & female of Gujarat, other state & total (Gujarat & other state). Also, stacked bar graph were found quite useful and optimally reflective in representing data related to nominal comparison, parts to whole, rating, ranking as well as distribution of responses with multiple statements and options in limited space. Finally, the interpretation was made on the basis of above analysis.