# DEVELOPMENT OF DESIGNS FROM ETHNIC *KHANA* MOTIFS ON DRESS MATERIALS

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# DEVELOPMENT OF DESIGNS FROM ETHNIC *KHANA* MOTIFS ON DRESS MATERIALS

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**in**

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**By**

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# CERTIFICATE

This is to certify that the thesis entitled **"DEVELOPMENT OF DESIGNS FROM ETHNIC *KHANA* MOTIFS ON DRESS MATERIALS"** submitted by **Miss PRATIKHYA BADANAYAK** for the degree of **MASTER OF HOME SCIENCE** in **TEXTILE AND APPAREL DESIGNING,** to the University of Agricultural Sciences, Dharwad, is a record of bonafide research work, carried out by her during the period of her study in this University, under my guidance and supervision, and the thesis has not previously formed the basis of the award of any degree, diploma, association, fellowship or other similar titles.

DHARWAD
JUNE, 2017

**(SADHANA D. KULLOLI)**
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**(SUREKHA SANKANGOUDAR)**

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# 1. INTRODUCTION

Clothing provides a means of self expression and aesthetic enjoyment. It is also one of the most personal component of daily life and its selection, use and care is our daily routine work. The technique of weaving was known about 8000 B.C. Fibres like wool, linen, silk or cotton was first introduced. In the ages of Ramayana and Mahabharata, the art of weaving reached a high standard of perfection and beauty. The appreciation of fine arts and textiles of Hindus met its climax during the district of the Mughal Emperors. The textiles were also made attractive with the addition of colours, available from natural sources especially of vegetable origin. Today's globalised and liberalised textile market is presenting intensive challenges to textile manufacturers in the industrialised countries. It has been recognized as one of the primary needs of mankind. People wear clothing for comfort, functional as well as social reasons. Apart from the practical functions of placing a piece of garment above the skin, wearing clothes also carries specific cultural and social meanings.

Fashion speaks of three aspects- style, acceptance and change. Change makes the fashion world go round. New styles that are introduced rise to peak of popularity and then decline into obsolescence. Some styles remain fashionable for longer time; some come back into fashion after a latent period, some remains classic and some fade. However, the speed of change is influenced by modern communication, constantly changing system marketing, purchase power, consumer behaviour, advances in mass production and seasonal change. With increasing fad for ethnic costumes and its popularity among the dress designers to give an exclusive traditional look, handloom and traditionally designed products have made a new vista to meet the demands inland and abroad.

Designing is an art and the art is a product of the creative process. It is the human power to conceive, plan and realize the products that serve human beings in the accomplishment of any individual or collective purpose (www.wikipedia.com).

Printing is a process for reproducing text and images using a master form or template. The earliest examples include cylinder seals and other objects such as the cyrus cylinder and the cylinders of nabonidus. The earliest known form of wood

block printing came from China dating before 220 A.D. Later developments in printing include the movable type, first developed by Bi Sheng in China. Gutenberg introduced mechanical movable type printing to Europe in the 15th century. His printing press played a key role in the development of the renaissance, reformation, the age of enlightenment, and the scientific revolution and laid the material basis for the modern knowledge based economy and the spread of learning to the masses. Modern large scale printing is typically done using a printing press, while small-scale printing is done free form with a digital printer. Though paper is the most common material, it is also frequently done on metals, plastics, cloth and composite materials. On paper it is often carried out as a large-scale industrial process and is an essential part of publishing and transaction printing.

Embroidery is the handicraft of decorating fabric or other materials with needle and thread or yarn. Embroidery may also incorporate other materials such as metal strips, pearls, beads, quilts, and sequins. Today, embroidery is most often seen on caps, hats, coats, blankets, dress, shirts, denim, stockings, and golf shirts. Embroidery is available with a wide variety of thread or yarn colour. The basic techniques or stitches on surviving examples of the earliest embroidery-chain stitch, buttonhole or blanket stitch, running stitch, satin stitch and cross stitch remain the fundamental techniques of hand embroidery today.

Patchwork or "pieced work" is a form of needlework that involves sewing together pieces of fabric into a larger design. The larger design is usually based on repeat patterns built up with different fabric shapes (which can be different colours). These shapes are carefully measured and cut, basic geometric shapes making them easy to piece together.

Weaving is a method of textile production in which two distinct sets of yarns or threads are interlaced at right angles to form a fabric or cloth. Similar methods are knitting, felting and braiding or plaiting. The longitudinal threads are called the warp and the lateral threads are the weft or filling. The method in which these threads are interring woven affects the characteristics of the cloth. Cloth is usually woven on a loom, a device that holds the warp threads in place while filling threads are passed through them. A fabric band which meets this definition of cloth (warp threads

with a weft thread winding between) can also be made using other methods, including tablet, back-strap, or other techniques without looms. The way the warp and filling threads interlace with each other is called the weave (Alka *et al*., 2009). The majority of woven products are created with one of three basic weaves: plain weave, satin weave, or twill. Woven cloth can be plain (in one colour or a simple pattern), or can be woven in decorative or artistic design. It is the oldest known form of producing cloth manually. Though the handloom textiles are matchless and differ from monotony of mill-made textiles, they need to be encouraged to uplift the weaver's communities (Barua and Gogoi, 1997). Dobby shedding mechanism is such an invention where small designs were woven using a pattern chain - a link of series of lattice. With passage of time, Joseph Marie Jacquard invented Jacquard shedding technology in 1801, through which it was possible to produce large and intricate designs and was adopted for producing self designs on textile made-ups, home textiles, floor coverings *etc.*

India had always been known as the land that portrayed cultural and traditional vibrancy through its conventional arts and crafts. Every region in India has its own style and art which are very exclusive for that particular region and has its own speciality with regards to colours, motifs used that symbolized the rich heritage (Ekta, 2016).

Karnataka, one of the Southern states of India, is famous for the distinctly produced cotton, silk and synthetic sarees. Among them, Dharwad sarees are quite popular that have demand in international market too. These sarees are woven using harmonious combinations of body, border and pallav. Presently, the polycotton sarees are produced on powerloom in vivid colours, suitable for all seasons, functions, age groups of both rural and urban folk. A large number of villages in Karnataka even today produce sarees and blouse pieces on handloom- light weight printed silks of Bangalore, mulberry silk sarees of Mysore, patti pallav of Hubli and Betageri, polycotton sarees of Lakkundi and Shigli and silk sarees with contrast borders of Molakalmuru. Prominently notable among them are *Ilkal* sarees with tope teni pallav and *Khana* the choli material of Ilkal, Gajendragad and Guledgudda. *Khana* are the choli or blouse materials with extra warp dobby figures, which are the traditional products of northern Karnataka. It is woven on pit loom having no warp beam. The woven material has border on both the sides ranging from 15 to 23 cm in width, with two strips of extra warp figuring all along its length. The body is fully covered with extra warp figuring with dobby shedding

mechanism. The *Khana* fabric is woven on handloom using silk warp and cotton weft (www.pramanik.in/saree.html). Each *Khana* piece will be of about 80 centimeter widths and 50 centimeter lengths.

Presently there are two types of looms existing in North Karnataka *viz.*, fly shuttle pit loom and powerlooms without jacquard attachment for designing. Dobby is the only shedding mechanism adopted for producing designs in the borders. Powerlooms came into existence since last three decades (1970s). Of course the output on powerloom is remarkably higher, but even then a greater percent of weavers in northern Karnataka have not installed powerlooms because of lack of capitals, technical services, training and fluctuations in power supply (Shailaja, 1991). On the other hand poweloom weavers have succeeded in producing fashion fabric with variegated designs, a challenge over the handloom products.

Many villages of Karnataka state is also home to traditional designs and intricate weaving methods. The more traditional sarees of Karnataka are the Molkalmuru sarees of Chitradurga and the *Ilkal* sarees of Bagalkot. Weaving is supposed to have come around the 8$^{th}$ century AD and the sheer rustic look of the textile keeps it still popular. The traditional Guledgudda *Khana* (Choli or Blouse, elsewhere called *Khana*), which is only one traditional cluster making blouse fabric in India. It compliments to *Ilkal* sarees as this combination is widely used, not only in the northern part of Karnataka but also in the Marathawada and Vidarbha regions of Maharashtra. While the aged ladies wear the *Ilkal* sarees and Guledgudda *Khana* in their traditional Maharashtrian style, the younger generations wear it in their modern fashionable style. As a result *Ilkal* sarees and Guledgudda *Khana* in their best combinations are used extensively in urban and rural parts of Karnataka and Maharashtra.

Be it a marriage or any big or celebration or ceremony, the combination of *Ilkal* sarees and Guledgudda *Khana* are widely used. This combination has been the treasure of beautiful, dignified, ultra-modern fashions of sixteen years old dream girls and that of sixty year old traditional dressed housewives too. Therefore, even during this ultra-modern competitive world, designer and fashionable ladies dresses are flooding the markets, the demand for *Ilkal* sarees and Guledgudda *Khana* is getting expanded through India and even abroad. No lady feels her collection complete, satisfactory and

rich, unless she adds at least one pair of *Ilkal* sarees and Guledgudda *Khana* (www.fibertofashion.com).

The speciality of this material is unique design and the raw material used being silk and cotton. Silk being natural fibers possess special properties like high moisture absorption, good luster and comfort to wear. The extreme hot climatic conditions in these regions made these people wear this *Khana*. Because of the high cost of silk, the *Khana* materials were also produced in combination with cotton as weft. Later the man-made fibers like viscose rayon, cuprammonium rayon and polyester fibres were also introduced. Nowadays, *Khana* is utilised for different products with modifications.

The unique designs produced by using dyed yarns represent the traditions followed by people of some regions of Karnataka and Maharashtra states. The motifs used for the designs are extracted from nature, ancient stone sculptures of Badami and the Hindu Mythology. These designs are well accepted by the people in this region and they have a strong belief in them. These *Khana* materials are so popular that, except these traditional designs no other designs are accepted by the users of *Khana*. In view of the importance and special craft style, the product is likely to be manufactured by domestic and overseas producers. In order to protect this craft style, the product is brought under Geographical Indication act (Geographical Indication application no-210).

The ground warp may be cotton, mercerized cotton, rayon, polyester or silk whereas weft is always cotton, single spun yarn with either Z or S twist of mercerized cotton. However, the rich lustrous and glossy appearance of extra warp is produced but either viscose rayon or pure silk with either filaments or spun (ply) yarns that float over the ground fabric. The main motifs in *Khana* are flowers, creepers, kalavar, fruits and seeds. There are some motifs that repeat on four picks but others repeat on five to fifteen picks. Greater the repeat, higher the cost of production and price per meter. The main colours available are green, red, blue, yellow (golden and lemon), orange, white and pink (Naik and Padhya, 1994).

It is observed from the survey that the use and market for Guledgudda *Khana* materials is mainly concentrated in northern Karnataka and Maharashtra that too mainly in the rural areas where its business scope is rather limited. There is a need to introduce

new end uses for *Khana* materials to popularize. Organization of fashion shows and product exhibition in major cities would probably boost the morale of this rural industry and contribute towards the upliftment of the rural weaving community. The *Khana* fabric is woven on handloom using silk warp and cotton weft. Here, 27 yards warp will produce 21 meters fabric, which also includes 25 yards extra warp. The weaver produces 3-4 meters fabric in eight hours. The of cost of cotton *Khana* is Rs. 50-55, silk around Rs. 100 and polyester *Khana* ranges around Rs. 40-45 per each *Khana* piece (Sreenivasa *et al*., 2003). But during 2016 the cost of the cotton *Khana* is Rs. 150-170, silk around Rs. 450-500 and polyester *Khana* ranges around Rs. 75-100 per each *Khana* piece.

Till now, the hand woven *Khana* material is being used only as choli/ blouse material mainly in rural areas. Considering the applicability's, *Khana* fabric can be efficiently used as home textiles and furnishings to diversify its monotonous utility by creating variegated designs emphasizing on quality, design, comfort and functionality and in turn giving a contemporizing look to relic *Khana* fabric. The home textile and furnishing can be functionally grouped as interior products, bedroom and bathroom textiles (Mathur and Hira, 2002).

Thousands of weavers presently have moved to other occupation or are working under master weavers as wage weavers to earn their livelihood, resulting in which very few have continued their ancestral profession as an ancillary business to preserve the folklore. In some cases, only a few women perform weaving operations in their free time and male go out to work. The *Khana* material was used by almost every woman in the village as choli along with *Ilkal* sarees. But with passage of time and westernization, village women have gradually neglected the bygone traditions. This on one side has affected the marketing of *Khana* material that in turn adversely influenced the social and economical life of the weavers.

In order to revive the *Khana* material and motifs, it is planned to design and develop the ethnic *Khana* motifs on dress materials. Monotonous utility of *Khana* fabric as choli/blouse material can be explored and widened by creating contemporary *Khana* designs on dress materials to suit the changing world.

Hence an effort is made to produce Dress Materials with ethnic *Khana* motifs with the following objectives:

- To design the *Khana* motifs for dress materials applying elements and principles of design
- To digitize the ethnic *Khana* motifs through CATD and develop dress materials
- To calculate the cost of production of developed dress materials
- To know the consumer preference of the developed dress materials

# 2. REVIEW OF LITERATURE

A review of past research helps in identifying the conceptual and methodological issues relevant to the study. This will enable the researcher to collect relevant data and subject them to sound reasoning and meaningful interpretation. The review of literature to the present study is arranged in this chapter under the following sub headings:

2.1 Problems faced by both handloom and powerloom weavers

2.2 Traditional textiles of Karnataka

2.3 Application of elements and principles of design in development of designs

2.4 Designing of motif using CATD technology

2.5 Designing of dress materials

2.6 Cost calculation of designed dress materials

2.7 Consumer preference for the dress materials

## 2.1 Problems faced by both handloom and powerloom weavers

Artisans are the most creative section of the society but they are the most neglected group of workers. Even the weavers himself produces clothes but not in a condition to afford clothes for their family members. Inspite of considerable efforts made to lift the handloom as well as powerloom industry out of its difficulties, the industry continues to be the grip of problems. However, the problems encountered by the weavers are summarized below:

Gurumoorthy and Rengachary (2002) conducted a study on “Problems of handloom sector in Soundarapandian”, to know the problems of handloom industry and revealed that pricing is a major problem in the handloom sector. In addition, working capital and marketing of their products were some other problems faced by the weavers.

The authors suggested that handloom industry need to produce goods as required by the consumers but not according to their preference.

A study on “Analytical study on handloom products production and marketing in Tamil Nadu” was conducted by Mathiraj and Rajkumar (2008) in his study on Handloom products production and marketing the researchers narrated the production related problems of the handloom weavers societies like wide fluctuation in the prices of yarn, lack of availability of skilled labour force. The researchers suggested that there is a need for modernization of handloom industry and formulations of production pattern and sales design.

Tripathy (2009) conducted a study on “Odisha handlooms: Problems and perspectives”, and opined that the problems and perspectives of Handloom Industry in Odisha that there are many problems in decentralized handloom industry due to illiteracy, inadequate finance facilities, cost control, quality control, procurement of raw material, fluctuation in prices in raw material etc. The study suggested that the weavers have to develop more designs and understand the customer preferences.

Phukan (2012) studied on “Handloom weaving in Assam: Problems and prospects” revealed that most of the weavers had no formal training of handloom production process and hence they had learn by observing and helping the older family members as well as master weavers. However a few of them had undergone formal training course at the government centres for both skilled and ordinary weaving styles. Moreover, in traditional non-commercial areas it was observed that the weavers preferred through shuttle looms having low productivity which was easier to operate at a low cost. The weavers due to their poor economic condition did not convert their looms to fly shuttle one. Hence production rate decreases thus, the weavers did not produce the diversified products.

Jayavel (2013) conducted a study on “Blow of textile industry on members of silk handloom co-operative societies in Kanchipuram district”, and found that there were around 60,000 silk weavers, out of them 50,000 weavers worked under co-operative societies. But at present these workers faced lot of problems related to their occupation. Majority of the weavers due to globalization and modernization faced lot of problems like meager wages, poor working conditions, inadequate non-monetary

benefits, and in-sufficient work throughout the year. Thus the Government should take necessary steps to overcome the problems of handloom weavers and improve the social economic status of the weavers.

Gangisetty (2014) in a study on “Problems of silk handloom co-operate societies in Chittoor district”, collected the information through structured questionnaire, which has been mainly composed of ranking scale from 150 handloom silk cooperative societies weavers’ in Chittoor District, the weavers were selected by using stratified random sampling technique and Henry Garrett Ranking technique and percentage analysis had been used to analyse of the data. The results revealed that handloom industry is oldest cottage industry in India, generating more employment opportunities to lakhs of artistic weavers, but in the recent years it has been facing more problems and many of the silk weavers in particular and weavers in general committed suicide also.

Venkateswaran (2014) conducted a study on “A socio economic conditions of handloom weaving in Kallidaikurichi of Tiruneveli district”, by personally interviewing 40 randomly selected wavers to know the socio- economic condition of the handloom weavers. The data were analysed through percentage, average and correlation. The present study dealt with the broad indications of the likely consequence of different policies implemented by the successive governments. The findings of study had considerable relevance to run the industry on modern techniques at all levels and improve the socioeconomic conditions of the handloom weaver households.

Shaw (2015) studied on “A study of the present situation of the traditional handloom weavers of Varanasi, Uttar Pradesh, India”, to understand the various problems of handloom weavers of Varanasi in Uttar Pradesh. The data was collected through the in-depth interview, semi structured interview, case study and focused group discussion. Most of the problems faced by handloom industry are perpetual in nature and hence to sustain the cultural and economic importance of the industry and the problems found were, invention of new technology (power-loom), capitalist control, drop off in wages, increased price of yarn, and so on. Finally the author concluded that, the policy maker should realize the importance of handloom sector and allocate the required funds for the upliftment of handloom weavers to avoid the decline in handloom industry.

## 2.2 Traditional textiles of Karnataka

Karnataka has a rich traditional and cultural heritage, which to a maximum extent has influenced the art and handicraft industries of the state. Weaving supposed to be one of the oldest methods of producing the fabric has developed into the largest industry employing greater percentage of the population and earning a great deal of foreign exchange. Yet, a touch of traditionality is still seen in the newly produced clothing items. Many research workers have conducted studies on the famous textiles of Karnataka, listed here under:

Shailaja (1991) carried out a research on "A study of handloom sarees and *Khana* of northern Karnataka", in Karnataka and noted that *Khan* weaving was introduced during the beginning of $20^{th}$ century. It was plain with contrast colour in the early days but later the motifs were introduced without the use of Pinjara. The motifs were produced by lifting the selected harness manually on throw shuttle handloom. Artificial silk was used for extra warp, on cotton ground. Guledgudda was the first village to introduce *Khan* weaving. The motifs produced during early days were very few *i.e.*, Bangar bali, Geer Khan, Rudraksha, chrysanthemum flower, Battalu, hua and so on.

An article on "Marvelous garbha silk sarees of Bhagyanagar" revealed that Bhagyanagar is a small village in Koppal district of Karnataka where the local weavers were engaged in production of beautiful silk sarees, popularly known as garbha reshme or half silk sarees, comprised of fine quality silk as warp and cotton as weft. The contrast border and tope teni pallav of the sari still manifests the beauty of traditionality. These garbha reshme saree were available in 5.70 or 6.30 meters of 42 inches width of which 30 inches formed the body and wide borders of *Gomi* or *Iikal, gadi dhadi*, flower, diamond and peacockborders on either side. Besides, other motifs in the border were paras, patti, pineapple, chrysanthemum, mango, rudraksha and so on. The surface enrichment in these sarees was brought about by using metallic zari (Naik and Suvarnagouri, 2005)

Itagi *et al*. (2008) conducted a survey on "Polyester cotton blended sari of Shigli (Karnataka): A success story". The weavers of Shigli used cotton and polyester yarns

for production of blended sarees. The weavers purchased cotton yarn from Hubli and Iikal as where polyester from Belgaum district. Some weavers purchased polyester yarn directly from Mumbai. The sari is woven from cotton warp of 2/100s, border with polyester yarn of 2/80s and 80s for weft. The main motifs used are Rudrakshya checks, Meenakshi, Kajal, Neelavathi, Kalavathi, Nandini, Mini checks, Kanchi checks, Balli, Ganga Jamuna and Nidhi checks. The designs are produced by using simple dobby mechanism on powerlooms.

Naik and Vastrad (2008) in a study on "Protection and revival of traditional hand embroidery, *Kasuti* by automation" reported that hand embroidery has importance and sanctity of its own. The traditional Karnataka *Kasuti* is elaborate, requires skill and hence works out to be more costly. Hence, this elaborate embroidery is more suitable for the traditional and expensive silk sarees, which surely enhance and restore the tradition. On the other hand, *negi Kasuti* motifs would go unseen and may gradually become extinct, unless efforts are made to revive it. Hence, computerizing *negi* motifs and incorporation through jacquard on the handloom hastened the production process and thus made traditionally available for women consumers of all income groups.

Byadgi and Naik (2010a) conducted a study on "Hand embroidered and Jamdani patterned Dharwad sarees: A comparative study". The Kutch embroidery designs were incorporated in the body and pallav of Dharwad polycot sarees through weaving using Jacquard Shedding mechanism. The cost aspects of these trendy Jamdani Dharwad saree were calculated by comparing with the hand embroidery sarees. The researchers concluded that the cost of developed sarees were relatively less because of adopted Jacquard shedding mechanism for producing these pattern not only assisted in creating new designs but also saved time, money and labour.

## 2.3 Application of elements and principles of design in development of designs

A study on "Weaving computerized *negi* motifs in traditional *Lakkundi* sarees" conducted by Vastrad (2003), depicted that *Kasuti* the word derived by combining two vernacular words of Karnataka *viz*., "*kara*" meaning hand and "*suti*" is the cotton thread, which in totally explains the handwork of cotton thread. *Kasuti* has resemblance

with tattooing and floor decoration that reflect the folk culture of that region. The designs for floor decoration and motifs used in embroidery were almost similar *i.e.* the geometrical patterns with dots, lines, squares, circles, swastika, lotus, fish, creepers, flowers, animals, birds and anthropometric figures. The *Kasuti* embroidery consists of four types of stitches *viz*. *Gavanti, murgi, negi* and *menthi*.

Sharma *et al*. (2006) in the article "Patterned shawls of Kullu- living tradition of Himachal Pradesh part-1" described that Kullu is famous for its shawls with striking geometrical patterns and vibrant hues. Dyed woollen yarn is woven into a warp sheet for colourful patterns of indigo blue, deep green, chrome yellow, deep red, white and black. The distinctive features of Kullu shawls is, on either side, the stripes run horizontally which are few centimeters wide (varying from two to seven centimeters) and are decorated with a variety of patterns. Some shawls displayed a bird motif with opened wings scattered all over the surface of the shawl. Motifs such as stylized floral patterns (phul), elaborate floral motifs (mergenda), crossed stars (kanchi tara), nightingale's eye (bulubul chasm), and swastika (ganesh) and many more were evenly distributed between parallel lines. The sources of inspiration for these motifs were nature, rituals and deities.

Byadgi and Naik (2010b) in their article "Automation of hand Embroidery motifs into self-woven designs" described that In the present scenario of fast life style, creating designs with the assistance of CAD has not only expanded the horizon of designing but also can create any number of designs that could be saved in library to apply as and when required. CAD systems are more advantageous with respect to speed, pattern creation, editing, repeating, flexibility, variety, colour ways and cost-effective. The adoption of CATD will be beneficial for a designer to replicate and reproduce the motifs appropriately and simple design can be visualized in different colour combinations on the monitor as well as develop new patterns by systematic arrangement of different motifs proportionately; in turn the entire design can be stored in the archive.

Kishore *et al.* (2013) in his study on "Adaptation of monumental motifs for textile application" depicted that India, the land of culture and crafts, has been known to the world for its magnificent textile arts since ages. There is a great need to revive the traditional records of textiles by giving captivating grandeur to the Indian textile pieces

by introducing innovative designs like Indian monuments on woven materials. Therefore, the researchers had put forth this innovative idea into practice. It has revolutionized the world of designing by bringing in a change in existing style of designing for woven materials like sarees, kurtis and skirts. Most of these beautiful buildings are having intricate structural designs that can be used to extract motifs for designing textiles for weaving as well as for printing which includes base, dome and minered, finial (terminal feature), spandrel (space between arches), marble carvings on wall, incised paintings, inlay work of Taj *etc*. These monumental designs were collected from either using the entire motif (monumental design) or by applying components and detailed carvings of the designs.

Singh *et al.* (2014) conducted a study on "Significance of colours in traditional canvas embroidery", in Hissar. Canvas embroidery is one of the oldest forms of embroidery. It has many variations and is a traditional feature of needlework in every culture. In order to study the colours, colour combinations and significance of colours in traditional canvas embroidery, 100 rural women who were practicing canvas embroidery were selected from ten villages located in different directions of Hissar. The data was collected with the help of self-structured interview schedule and through observations. The designs of canvas embroidery articles were observed for their colours, colour combinations and the information was documented with the help of photographs. The results were revealed that the colours used for the canvas embroidery were in contrast and did not always tally with the significance of the motif. The colour of the fabric was found to be the deciding factor for the colours of motifs irrespective of natural colour of the motif. Majority of designs were in more than two colours and some colours had traditional symbolism.

## 2.4 Designing of motif using CATD technology

Computer Aided Designing (CAD) is a major trend in the apparel industry. The use of CAD has provided the opportunity to assist in the process of product development, and has made manufacturing flexible. Computers have assisted to carry on the work easily and in a short duration, maximum number of assignments can be fulfilled leading towards profit of the company. CAD has dramatically increased the

efficiency of apparel manufacturing and production as well. Hence it was felt necessary to gather the highlights of researchers on CAD as under:

Jyoti and Ekta (2009) conducted a study on “Designing and printing of bed cover using CAD technology”, in Allahbad. Various motifs suitable for bed covers were selected. Some of the motifs were developed on computer using Coral draw and Paint brush programme. Fifteen designs were prepared and analyzed visually. The selected designs were adapted on the bed covers through screen printing. The results revealed that the printed bed covers were highly appreciated and accepted by the entrepreneurs.

Jyoti and Grover (2009) in their article on “Designing and printing of bed cover using CAD technology” viewed that Computer Aided Designing is gradually taking momentum in the era of textile designing. The conventional method of designing was tedious, time consuming and laborious. The entire process of designing the fabric is revolutionized with the introduction of CAD. The researcher developed fifteen designs for screen printing of bedcover using Corel draw and Photoshop software by arranging scanned and prepared motifs which were highly appreciated by the respondents. The software eventually saved time, money and labour resulting into low cost of production.

Byadgi and Naik (2010b) in the article “Automation of hand embroidery motifs into self-woven designs” depicted that among the variegated Indian embroideries, Gujarat has anchored a greater wealth and variety of stitches than any other state and boosts some of the most colourful and exquisite embroideries such as mirror work of Kutch and bead work of Saurashtra. As these traditional textiles of Gujarat are widely used and adopted in latest fashion fabrics, the designers have begun to explore deeply the technology to develop the conventional motifs on to modern textiles. Since, the conventional embroidery motifs provide a source of inspiration to many young designers in developing interesting patterns. Hence efforts were made by the researcher to produce the Gujarat embroidery motifs into automated designs by using Computer Aided Textile Designing software - GC Kala-2004 and Paint Shop Pro (PSP).

Babel and Kumawat (2011) conducted a study on “Value addition of low width khadi fabric into khadi bed linen and embellishment with CAD embroidery”. The researcher developed special layout of motifs, on less width khadi fabric which could be used as bed linens and these newly developed bed linen were highly acceptable (70-90

per cent). The products were found to be exclusive and unique. The cost of developed bed linens was found to be very reasonable and had good market potentials. The author also referred that the bed linens could be embellished with computerized machine embroidery and it may go as a new venture of self-employment to produce variegated designs on khadi bed linen which could be promoted through retailers. It was concluded that CAD embroidery is a source of textile designing and creativity.

Kaur and Bight (2011) conducted a study on "Designing of rugs with paper folding and cutting motifs using screen printing", with the aim to know the origin and history of rug and screen printing. The most preferred designs of rugs were taken for designing of rugs with paper folding and cutting motifs using screen printing. Thirty designs of rugs were created with the help of computer software Coral Draw and Adobe Photoshop. Designs were evaluated and selected for weaving and printing. The execution of the study revealed that the charm of paper cutting motifs has unfolded several possibilities, paving the way to discover a wide range of designs and the application of screen printing provided a new look to the ornamentation of textiles.

Gupta and Joseph (2015) in the article "Development of designs for table cloth through CAD software" depicted that textiles can be given a new aesthetic appeal by enriching them with the motifs used by ancient civilizations. One such civilization was of Greeks, who were considered to be the most artistic and innovative people. The ancient Greeks created what has become known as classical art and are known for three main items; their sculptures, their temples and their vase paintings. For the present study, eighty Greek motifs under eight distinct categories *i.e.* animal, human, pottery, foliage, stylized, architectural, geometrical and stylized flora fauna, were collected. On the basis of preferences of motifs by respondents, five top ranked motifs in each category were selected for development of designs for home furnishing article such as tablecloth using Auto CAD software. The execution of this study revealed that the charm of Greek motifs has unfolded several possibilities, paving the way to the discovery of wide range of designs.

Ekta (2016) conducted a study on "Digitalization of motifs based on Indian folk paintings through CAD and their adaptation on apparels using digital printing technique", in Allahabad, Uttar Pradesh. Madhubani and Warli paintings, although one

of the most intricate art, still governs the entire fashion market. A total of 9 designs, three each for apparels including sarees, dress materials and kurtis were developed. The developed designs were evaluated by a panel of 30 judges. A five point ranking proforma was used for this purpose. The designs were scored as 1, 2, 3, 4 and 5 corresponding to poor, fair, good, very good and excellent respectively. The fusion designs prepared by CAD were successfully applied on various apparels and handicraft items using digital printing and all the prepared articles were highly appreciated and well accepted with regards to visual evaluation and cost effectiveness.

Designing is a creative/ technical process that is dependent upon the ability of the designer to combine aesthetic sensibility with a strong knowledge of the technology. As CAD software not only help in producing a design but also provide easy tools to make changes as per the requirement, thus reducing the time and energy.

## 2.5 Designing of dress materials

Jyoshtna and Padma (2003) conducted a study on "Development of designs from Madhubani painting on kameez sets". Based on the subjective evaluation of motifs and the advice of experienced persons in weaving, three motifs of fish, bird and flower with leaf of Madhubani painting were selected and designs were modified to suit kameez sets. The common background colour off white and four colours of dark shades predominantly used in Madhubani painting were selected *i.e.* green, black, red and yellow. As the design was large, Jacquard technique of weaving was adopted to weave the kameez sets. First the design was plotted on graph paper and transferred to punch cards in the form of hole and blanks and further the weaving was carried and innovative kameez sets with Madhubani painting design were developed. The results revealed that the kameez sets with Madhubani painting designs were well accepted by the consumers and readily introduced into the market.

Girija and Mary (2004) conducted a study on “Design development from Kondapalli toys”, in the districts of Andhra Pradesh of Saifabad. Kondapalli toys as pride of Andhra Pradesh toys, is a requisite craft of toy making known for its wood used, colour combination and characteristic feature of village occupational toy designs inspired by nature and surroundings. The investigator developed twenty designs for

different end use items, from Konadapalli toy figures. Evaluation was done by a panel of 30 judges. The researchers concluded that the products should have a good market potentiality and can be popularized on large scale basis.

Jyoti *et al.* (2010) conducted a study on "Adaptation of Mandan designs on western dress in Allahabad", Uttarpradesh. The motifs were collected through books, literature of Meena community, magazines and internet and total 15 designs: 10 for jeans and 5 for capries were developed by arranging motifs in different way with the help of CAD software. The researchers concluded that all the developed jeans and capries were highly appreciated by the judges in term of designing and cost effectiveness.

A study on "An adaption of traditional designs on sarees of Meitei community of Manipur" conducted by Devi and Srivastava (2011). The researchers took various motifs from traditional textiles and costumes of Meitei community of Manipur were documented followed by screening of designs in terms of suitability for adaption on apparel items. In this 30 motifs were selected and developed using traditional Manipuri motifs with the suitable software's *i.e.* Adobe Photoshop and Corel draw .The selected motifs from the three designs were transferred to blocks and stencils to develop the final products. Adoption of designs from traditional textiles and costumes of Meitei community of Manipur gave a new way to discover a unique product and gave an opportunity to customers for choosing an alternative. On the other hand, this study gave a guideline in developing innovative creations and knowledge for contemporization of traditional designs of Manipur district.

Kaur and Gandotra (2012) carried out a research on "Design development of traditional embroidery motifs in knitwears through computer aided designing" to design simple but stylish knitwear product with traditional embroidery stitch of *Phulkari*. Thirty *Phulkari* motifs based on the preferences of respondents and judges were identified and designs were drawn on Corel draw and then these designs fed into computer system of knitting machine to get final pieces of knit wears with *Phulkari* motifs. Thus, the use of the computer aided designing is helpful in the revival of traditional embroidery in more sophisticated and modern method of designing trendy

and fashionable products. Finally *Phulkari* motifs incorporated knitwears were appreciated and adopted by the respondents.

Devi and Srivastava (2013) conducted a study on “Traditional designs of Meitei community of Manipur: adaptation on salwar kameez”. In this study, various motifs from traditional textiles and costumes of Meitei community of Manipur were documented followed by screening of designs in terms of suitability for adaption on apparel items. In this 30 motifs were selected and developed using traditional Manipuri motifs with the suitable software’s i.e. Adobe Photoshop and Corel draw .The selected motifs from the three designs were transferred to blocks and stencils to develop the. The researchers concluded that the developed salwar kameez sets were highly accepted and had enough market potential and this study gave a guideline in developing innovative creations and knowledge for contemporization of traditional designs of Manipur district.

Shalini and Manisha (2013) were carried out a study on "Designer border from Aipan: a boon to textiles fashion industry". In this study Aipan art, the vibrant living tradition of floor painting in Kumaon region of Uttarakhand was taken as a source for development of motifs. A total of twenty-five motifs were adapted for development of border designs with screen printing. Totally fifteen motifs were selected by panel of judges according to their suitability to screen printing and the motifs were developed using Adobe Photoshop software and finally these fifteen motifs were used in combination to develop designs for borders. The designs were further evaluated by the panel of thirty judges to get five best designs for borders. Screens were preferred and borders were printed and surface enriched with embroidery, beads, laces and stones. Results revealed that, cent per cent of respondents rated the borders between excellent to good for all design parameters.

Upadhaya and Babel (2013) carried out a study on “Magic of floor on fabric: Revival of traditional floor painting of Kumaon by contemporary adaption on apparels”, in Udaipur. Kumaon, the remote Himalaya regions is also rich in this art of floor decoration which is locally called Aipan. The researchers collected total fifty motifs of Aipan art, then simulated through CorelDRAW a total of ten designs five from single motifs and five from combination of motifs were selected for development of apparels through block printing. The researchers concluded that the prepared kurtis were

appreciated and adopted by the consumers. Thus, block printing and CAD technology is helpful in the revival of traditional Aipan motifs.

"Designing of indowestern garments by using tantric motifs" a study was conducted by Sharma and Garg (2014), to revive the age old tantric motifs of Rajasthan. Many people still consider tantra to be full of obscenities and unfit for people of good taste. It is also often accused of being a kind of black magic. However, in reality, tantra is one of the most important Indian traditions, representing the practical aspect of the Vedic tradition. The study was undertaken to add new and interesting ideas, which can break monotony and give a touch of novelty in construction of garments by using the tantric motifs. It was concluded from the data that, designing of black and white garments with tantric motifs with stencil printing were preferred by the consumers.

Sharma *et al.* (2014) conducted a study on "Digitalization of *Madhubani* designs for transferring on apparels using screen printing technique" to develop designs inspired from *Madhubani* paintings of Bihar for ladies kurtis, bed spreads and sarees. Out of twenty designs, ten each for ladies kurtis and sarees were developed manually and these designs were subjected to visual evaluation by a panel of thirty judges for selection of two best designs from each category in order to apply on various articles. The articles were printed by screen printing method. The study proved to be beneficial for those women who want to start an enterprise as they can follow up these guidelines for designing, preparation of screens and printing procedure.

In a study on "Adaptation of Warli art for the development of blocks for printing of apparels", conducted by Vedika *et al*. (2014) to develop blocks of Warli paintings of Maharashtra for printing on apparels and handicraft items. A total of thirty blocks with motifs were selected by the researchers and applied on apparels. Each article was evaluated by a panel of thirty judges. A ranking profoma was given in order to evaluate the acceptability of the developed produced. The researchers revealed that the Warli motifs were successfully adapted for designing the apparel using block printing and the prepared products were highly appreciated and well accepted with regards to visual evaluation and cost effectiveness.

## 2.6 Economic analysis of designed textiles

A study on “A profile on Banaras silk sarees” was conducted by Singh (2008). The factors like raw material, wages for preparatory processes, weaving and other expenses along with profit margin of the weaver were taken into account while calculating the cost of production of Banaras silk sarees at weaver’s level. The estimated cost of different silk sarees ranged from Rs. 1,700 to 3,800/-. Cost of raw materials accounted to a greater extent as compared to other components of the cost. The cost of Jangla saree is maximum as compared to other sarees i.e. Rs. 3,751/- saree where as the cost of Brocade and Kota cutwork saree is Rs. 3,447/- and Rs. 1,735/- saree respectively.

Sarkar (2011) in his “Revival of Baluchari saree of Bengal” revealed that, the cost of the pure tussar Baluchari sarees ranged from Rs. 3,500 to 6,000 depending on the workmanship and half tussar Baluchari saree were sold at the cost ranged from Rs. 2,000 to 3,000 and pure cotton Baluchari from Rs 800 to 1,200. From the survey it is observed that, the selling percentage of half tussar saree, pure tussar saree and pure cotton Baluchari sarees are 50, 30 and 20 % respectively. The selling percentage of the half tussar sarees was high because of affordable cost and gorges looks. Though pure cotton Baluchari sarees costs less but its maintenance cost is high, and required greater care hence acceptability is less.

Sharma and Paul (2015) in their study on “Adaptation of Indian folk paintings for designing and digital printing of apparels using Computer Aided Designing” observed that the cost of preparing single product in each category were quite high due to the design conversion charges and printing charges but this cost will be reduced if the fabric would have been mass printed digitally. Further the design conversion charges would also be divided into the total number of the products prepared, thereby reducing the cost.

## 2.7 Consumer preference for the dress materials

Consumers are the king in the field of marketing. Any product development always depends on the choice and preference of the consumer, which differs widely. There are wide varieties of textiles available for the consumers in today’s era putting

them in great dilemma while selecting the fabrics. Hence, it is necessary to know the consumer preferences towards textiles by reviewing some of the articles

Smriti and Animesh (2007) conducted a study on “Preference of apparels and dress materials by the tribal girls”, in Pusa. Education has created awareness to select serviceable, functional and comfortable fabric/ apparel for their personal use. The researchers selected 200 tribal college girls through multistage stratified random sampling technique and the data were collected through personal interview method. The researchers revealed that the tribal people have their own social and cultural values. Majority of them preferred simple constructional designs in their apparel.

Vishnoi and Singh (2014) conducted a study on “Assessing the acceptability of household textiles and apparels designed through foreign art motifs”, in Uttar Pradesh. African art history has played a significant role in shaping the culture and history of the world. The belief that Africa is the cradle of the history of mankind is virtually unshakeable. The researchers collected various art motifs and from that suitable motifs were taken for the development of new designs for sarees, kurtis, various home furnishing items (Bed sheets, curtains, sofa covers and Cushion covers) and handicraft items (Hand bags, wallets, file folders and magazine holders). Total 20 designs (2 for each item) were used for application on selected items. The evaluation was done by exhibition with a panel of 100 judges. The researchers concluded that all the articles prepared through foreign art motifs were highly accepted by all the respondents. It was also observed that all designed items with African, Chinese and Japanese art motifs with embroidery and screen printing is a successful innovation with reference to motifs, placement of motifs and colour combination

Sharma and Paul in their study on “Adaptation of Indian folk paintings for designing and digital printing of apparels using Computer Aided Designing”, in 2015, observed that among the prepared apparels red sari, green kurti and yellow dress material were given first preference in their respective categories. However, all the printed products were appreciated and well accepted with regards to colour combination and cost effectiveness.

# 3. MATERIAL AND METHODS

The present research on “Development of designs from ethnic *Khana* motifs on dress materials” was carried out at the Department of Textile and Apparel Designing, University of Agricultural Sciences, Dharwad during the year 2015 - 2017. The methodology adopted for the study is classified under the following sub headings:

3.1 Survey method

3.1.1 Tools used for the study

3.1.2 Locale and sample

3.1.3 Pilot study

3.1.4 Variables included

3.2 Experimental method

3.2.1 Selection and modification of *Khana* motifs

3.2.2 Designing of dress materials with *Khana* motifs by applying elements and principles of design

3.2.4 Digitization of *Khana* motifs

3.2.5 Development of punch cards and lacing

3.2.6 Selection of raw materials for dress materials

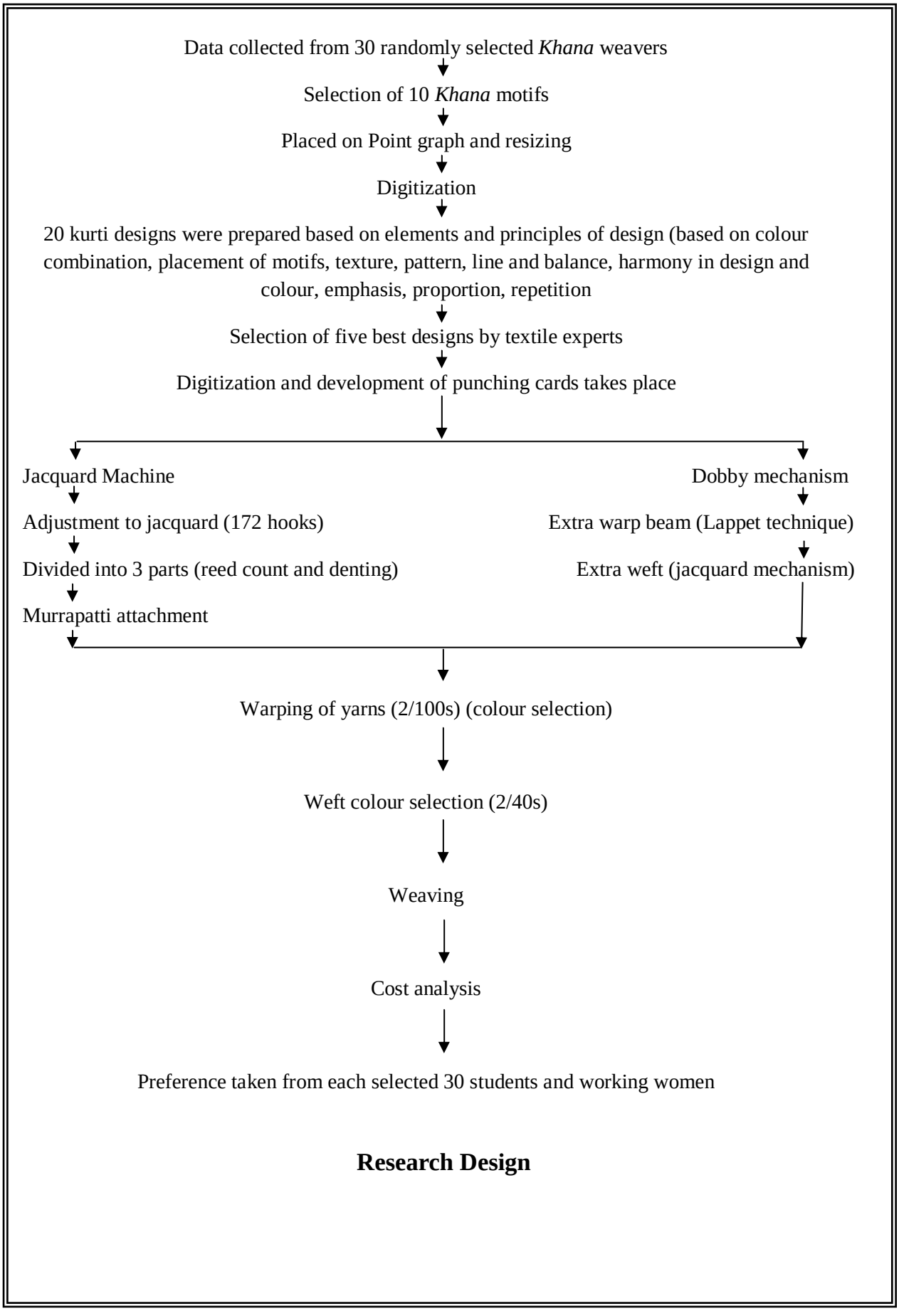
3.2.7 Weaving of dress materials by jacquard mechanism

3.3 Cost calculation of dress materials

3.4 Preference for newly developed dress materials

3.5 Statistical analysis

3.6 Hypothesis set for the study




**Research Design**

## 3.1 Survey method

The survey was conducted in the Guledgudda village, Karnataka district to collect the information about the historical background of Guledgudda *Khana*, different problems faced by the *Khana* weavers and demographic conditions of the weavers.

### 3.1.1 Tools used for the study

A self structured questionnaire was used to collect data by personal interviewing thirty randomly selected Guledgudda *Khana* weavers, Questionnarie-1 (Appendix-I) administered to the weavers to gather information about the demographic condition of the weavers, problems faced by them and historical background of *Khana*.

### 3.1.2 Locale and sample

Thirty *Khana* weavers of Guledgudda, Karnataka (Fig. 1), were randomly selected for the survey to collect information about the weavers and *Khana* materials.

### 3.1.2 Pilot study

Pilot study was very important for pre-testing of the self- structured questionnaire. The questionnaire I was administered to five weavers engaged in weaving of *Khana* choli materials of Guledgudda. After the pilot study required modification in the questionnaire were made. However, the samples chosen for pilot study were not included in the final data collection.

### 3.1.4 Variables included

Dependent and independent variables were included for the present study that is further classified as follows.

#### 3.1.4.1 Dependent variables

a. Problems faced by the *Khana* weavers

b. Woven dress materials with *Khana* motifs


**Fig. 1. Locale of the study (Guledgudda town)**

### 3.1.4.2 Independent variables

a. Age

b. Education

c. Income

d. Family type and

e. Family size

### 3.1.4.3 Classification of independent variables

**1. Age of the respondents**

The age of the respondents was categorised on the basis of mean ± 0.425 standard deviation.

| Sl. No. | Category | Age |
|---|---|---|
| 1. | Young | Less than 30 years |
| 2. | Middle | 30-55 years |
| 3. | Old | More than 55 years |

**2. Education of the weavers**

The education of the weavers was grouped based on the education as given under.

| Sl. No. | Categories | Education level |
|---|---|---|
| 1. | Illiterate | Do not know to read and write |
| 2. | Primary | 1-7 |
| 3. | Secondary | 8-10 |
| 4. | Higher secondary | PUC |

**3. Income of the weavers**

By using the statistical method mean ± 0.425 standard deviation the weavers were classified based on their annual family income into three categories.

| Sl. No. | Categories | Annual family income |
|---|---|---|
| 1. | Low Income | Rs. < 20,000 |
| 2. | Middle income | Rs. 20,001- Rs. 40,000 |
| 3. | High income | Rs. > 40,001 |

**4. Type of family**

Weavers were classified based on the types of family as follows.

| Sl. No. | Type of family |
|---|---|
| 1. | Nuclear |
| 2. | Joint |

**5. Family size of the weavers**

For convenient, size of the families was divided into three categories namely small, medium and large. The classification was done on the basis of mean ± 0.425 standard deviation.

| Sl. No. | Categories | Family size |
|---|---|---|
| 1. | Small | ≤ 4 members |
| 2. | Medium | 5-9 members |
| 3. | Large | > 9 members |

## 3.2 Experimental method

The experimental method of the study includes the selection and modification of *Khana* motifs, designing of dress materials by applying elements and principles of design, digitization of motifs, weaving of dress materials and so on.

### 3.2.1 Selection and modification of *Khana* motifs

An effort was made to collect the motifs that are found on clothing materials and popularly applied in the *Khana* material. Totally 10 traditional *Khana* motifs were collected from the weavers and as well as from various secondary sources *viz*., traditional woven textiles, research articles, magazines, dissertations and thesis, journals, websites. Then the collected designs were transferred to point graph, then resizing was done according to the requirement (Table 1).

### 3.2.2 Designing of dress materials with *Khana* motifs by applying elements and principles of design

The ten collected *Khana* motifs were illustrated on point paper. Applying elements and principles of design (Fig. 2) twenty different types of designs for dress materials were designed through Adobe software by resizing and combining the motifs depending on the placement of motifs on the dress materials on border, centre front, middle of body and neck with border designs. Firstly the motifs were arranged in a line at the border and at the centre front designs by increasing the size according to the requirement by giving a shape. An attempt was made to bring proportion in between the spaces of centre front design. The colour of the motif was changed to either silver or gold to bring emphasis. A harmonical order was made at the border of the dress material by the placement of repeating motifs. In the neck with border designs balance was inbuilt for the viewer by maintaining equal amount of space on both sides. An increase in the texture of the fabric was made by changing the denting pattern *i.e*. three threads per dent. A careful planning and grouping the motifs into borders and along the body was made to create a pleasing harmony within the pattern considering the motif size, form and type.

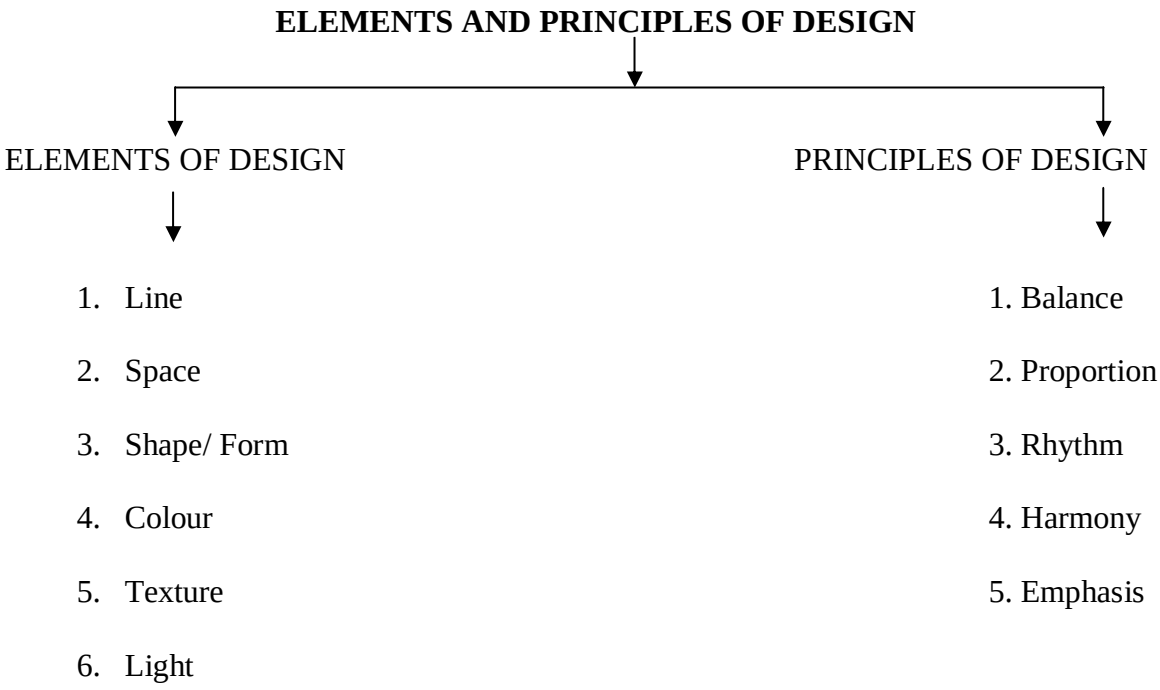



**Fig. 2. Elements and principles of design**

### 3.2.3 Digitization of *Khana* motifs

Traditionally the *Khana* motifs (extra warp design) are woven with dobby mechanism. Here, it was framed to design and develop *Khana* motifs on dress materials by jacquard mechanism using punch cards. The designed five types of dress materials with *Khana* motif combinations were digitized using Adobe photoshop 7.0 and coral draw X8 CATD software for punch card preparation. Then five designs were selected by the textile experts for further weaving of dress materials. The Questionnnarie-2 (Appendix-II) was used to select best developed five designs among twenty developed designs for dress materials from ethnic *Khana* motifs. A self- structured five point rating proforma was prepared to take the preferences from thirty purposively selected textile experts for further weaving. The questionnaire consists of two parts: the first part encompassed the general information of the textile experts and second part dealt with the preferences for the design developed from ethnic *Khana* motifs for dress materials.

### 3.2.4 Development of punch cards and lacing

As these designs are designed to incorporate through weaving by extra weft figuring the punch cards were developed for the five designed combinations of *Khana* motifs for dress materials. The harnesses of the jacquard were divided into three parts to obtain the designs as required either at sides, centre, both at centre and side and all over the body. Thus, the jacquard threads were aligned according to the design requirement *viz.* border, centre front, middle of body and neck with border designs. GC Punch, card punch controlling software interfaced in with the computerized card punching machine was used to punch the jacquard cards. Then the punched cards were laced manually in serial order to form a pattern chain.

### 3.2.5 Selection of raw materials for dress materials

Mercerized 2/100s count cotton yarns were selected as warp yarns and 2/40s count as weft yarns while, the extra weft figuring was carried out using untwisted, multi- filament polyester yarns having 110d count number. The denting process of warp yarn is 3 yarns per dent in order to bring change in the texture of the dress material.

### 3.2.6 Weaving of dress materials

The weaving of designed dress materials with selected *Khana* motifs were carried out on powerloom with murapatti attachment through extra weft figuring by jacquard attachment. The loom consisting of 172 hooks, with 72 number reeds and the total harness is divided into three parts to obtain neck, front and middle designs. In total five dress materials were woven with variegated combination of *Khana* motifs.

## 3.3 Cost calculation of dress materials

The various factors like fixed cost (depreciation) and variable cost (repairs and maintenance, cost of yarns and punch cards, preparatory process, wages for weaving) were taken into account for determining the cost of production. However, 30 per cent net profit on the total production cost was added to calculate the selling cost of dress material. Then the consumer acceptances were assessed.

## 3.4 Preference for designed dress materials

A self structured questionnaire 3 (Appendix-III) was used to take the preferences from thirty adolescent girls (students) and as well as from thirty women either working or housewife's (totally 60 respondents) regarding the newly developed dress materials from ethnic *Khana* motifs. A five point rating proforma was prepared and distributed among the respondents to rate the designed dress materials.

## 3.5 Statistical analysis

1) The data was analysed statistically with average, mean, standard deviation, percentage and frequency tables for all the variables.

2) Chi- square test of significance was applied to know the problems faced by the weavers and preference for jacquard woven *Khana* kurti materials

The formula used to calculate Chi- square test with the significance tested at (r-1) (c-1) degrees of freedom was:

$$X^2 = \frac{\Sigma(O_{ij} - E_{ij})^2}{E_{ij}}$$

Where,

$O_{ij}$ = Observed frequency

$E_{ij}$ = Expected frequency (row total X column total / grand total)

r = Number of rows

c = Number of column

3) Weighted Mean Scores (WMS) was applied to assess the different problems faced by the weavers and as well as the extent of acceptance for newly designed *Khana* dress materials. The formula used to calculate was:

$$\text{Weighted mean scores} = \frac{S_1F_1}{N}$$

Where,

$S_1$ = Scores derived by the respondents

$F_1$ = Frequency

N = Sample size

Scoring is given in the following order

| **Five point scale** | **Three point scale** |
|---|---|
| Excellent -5 | Always - 3 |
| Very good - 4 | Sometimes - 2 |
| Good - 3 | Never - 1 |
| Fair - 2 | |
| Poor - 1 | |

Ranking was given in the descending order i.e. first rank with the highest value and last rank with the lowest value.

4) Acceptability Index (A.I)

$$A.I = \frac{\text{Total scores of each woven } \textit{Khana} \text{ kurtis}}{\text{Maximum scores obtained}} \times 100$$

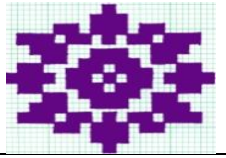
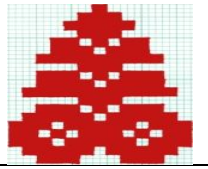
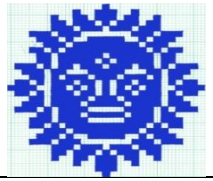
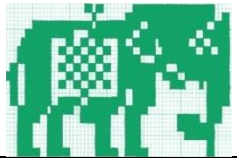
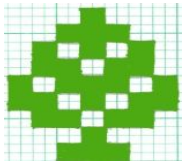
## 3.6 Hypothesis set for the study

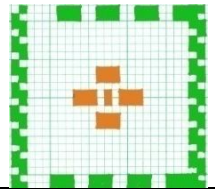
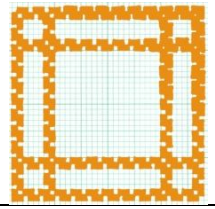
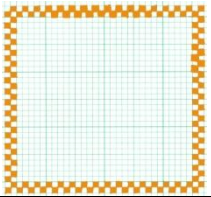
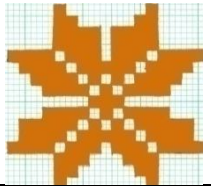
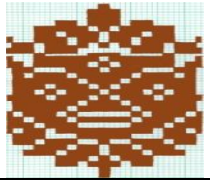
1. The extra warp dobby *Khana* designs cannot be produced by extra weft jacquard mechanism

2. *Khana* dress materials can be designed by applying elements and principles of design

3. The developed dress materials are preferred and accepted by the consumers

**Table 1. Types of motifs used in *Khana* Material and its meaning**

| Sl.No. | Motifs name | Meaning | Motifs/Designs |
|---|---|---|---|
| 1. | Chitramala | Garland of beautiful drawing |  |
| 2. | Theru | Traditional chariot used for annual car festival to carry God/ Goddess in it in a procession. The design shape resembles the chariot |  |
| 3. | Suryanarayana | The design resembles sun God |  |
| 4. | Ane Hejje | Elephants step design resembles step of elephant used in the traditional processions |  |
| 5. | Tulsi Pan | The leaf of Tulsi plant, a goddess worshiped by Hindu. The design resembles the tulsi leaf |  |

| Sl.No. | Motifs name | Meaning | Motifs/Designs |
|---|---|---|---|
| 6. | Tiruki Kavale Hoovu | A type of flower used for worshiping of God |  |
| 7. | Double Hardy | Two fold design |  |
| 8. | Single Hardi | Single fold design |  |
| 9. | Sooji Mallige | A flower with very narrow petals and give mild fragrance similar to Mallige (highly scented with sweet fragrance) |  |
| 10. | Siddeshwarmukuta | Siddeshwara is the name of a popular God worshipped by people in Karnataka and Maharashtra. The design resembles the face of God Siddeshwara. |  |

# 4. RESULTS

The results of present study on "Development of designs from ethnic *Khana* motif on dress materials" is analysed and presented under the following subheadings:

4.1 Historical background of *Khana* material

4.1.1 General history of *Khana*

4.1.2 Weaving process of *Khana* material

4.1.3 Motifs and fibre used for manufacturing *Khana* material

4.2 Demographic characteristics of *Khana* weavers

4.3 Procurement of raw materials, motifs and source of marketing

4.4 Problems faced by the *Khana* weavers

4.4.1 Problems faced during procurement of raw material

4.4.2 Problems faced during marketing of *Khana* materials

4.4.3 Problems faced before and after loom process

4.4.4 Health problems faced by the *Khana* weavers

4.5 Selection, digitization and development of designs

4.5.2 Designing of *Khana* kurtis

4.5.2 Selection of designs for kurtis

4.5.3 Digitizing the selected *Khana* designs for kurtis

4.6 Weaving of *Khana* dress materials

4.6.1 Punching of jacquard cards and lacing

4.6.2 Raw material selection

## 4.1 Historical background of *Khana* material

The historical background of *Khana* material includes the general history of the Guledgudda *Khana*, weaving process of *Khana* material, motifs and fabrics used for manufacturing *Khana* material and products manufactured.

### 4.1.1 General history of *Khana*

The history of Guledgudda *Khana* states that, weaving of blouse piece to suit every sari woven is not a new art but practiced since long. During 1580, second Ibrahim Adilsha of Bijapur built a fort on hill due to which after few centuries' people migrated from top to plain ground next to hill hence it is called as Guledgudda. The people migrated from various places to Guledgudda were of different castes like devangas, pattasalias, kuruvinshetty, muslims *etc*. They started weaving a typical type of cloths for blouse material named as *Khana*s. Whenever any pooja is performed in the villages of

north Karnataka, it is a custom to worship the God by keeping a blouse material over the saree. It is always folded in a typical triangular shape, traditionally called as *Khana*s. These blouse material is always produced by keeping definite width and length *i.e.* 80 cm x 50 cm. From each piece of *Khana* a blouse could be stitched for ladies. The scale for measuring of this definite length of blouse piece is also traditionally called as *Khana*. There is no definite historical evidence as to when the handloom weaving industry started at Ilkal and Guledgudda. But according to the popular belief and circumstances, it might have started in the $8^{th}$ century when the Chalukya Dynasty was in full swing in this region.

### 4.1.2 Weaving process of *Khana* material

The production of *Khana* fabric involves various operations. The *Khana* has woven border on both sides ranging from 6 inches to 9 inches in width, with two to three stripes of extra warp figuring all along its length. The body is fully covered with extra warp along with ground figuring with dobby shedding mechanism *i.e.*, addition of extra warp beam (Plate 1). The ground warp may be cotton, mercerized cotton, rayon or silk. Whereas weft is always cotton or mercerized cotton, single or double spun yarn with Z or S twist. However, the rich, lustrous and glossy appearance of extra warp is produced by either viscose rayon or by using pure silk yarns. The cotton yarn is dyed with vat or naphthol and silk by acid dyes. Wooden lattice dobby is used for producing the design on *Khana* with extra warp, dobby capacity depends on type of design; normally in Guledgudda *Khana* 515 lever cylinder type lattice dobby is used. Another type of dobby is grooved cylinder, *i.e.*, according to design cylinder is grooved. According to the design, wherever grove is there, that particular lever is lifted; no need of lattice and pegs. This dobby is used for smaller design. Figure 3 shows the flow chart of weaving process of *Khana*.

### 4.1.3 Motifs and fibre used for manufacturing *Khana* material

The unique designs produced by using dyed yarns represent the traditions followed by people of some regions of Karnataka and Maharashtra states. The motifs used for the designs are extracted from nature, ancient stone sculptures of Badami and the Hindu mythology. These designs are well accepted by the people in this region and they have a strong belief in them. In whole, ten traditional motifs are used like Theru,

**Plate 1. Powerloom attached with extra warp beam**

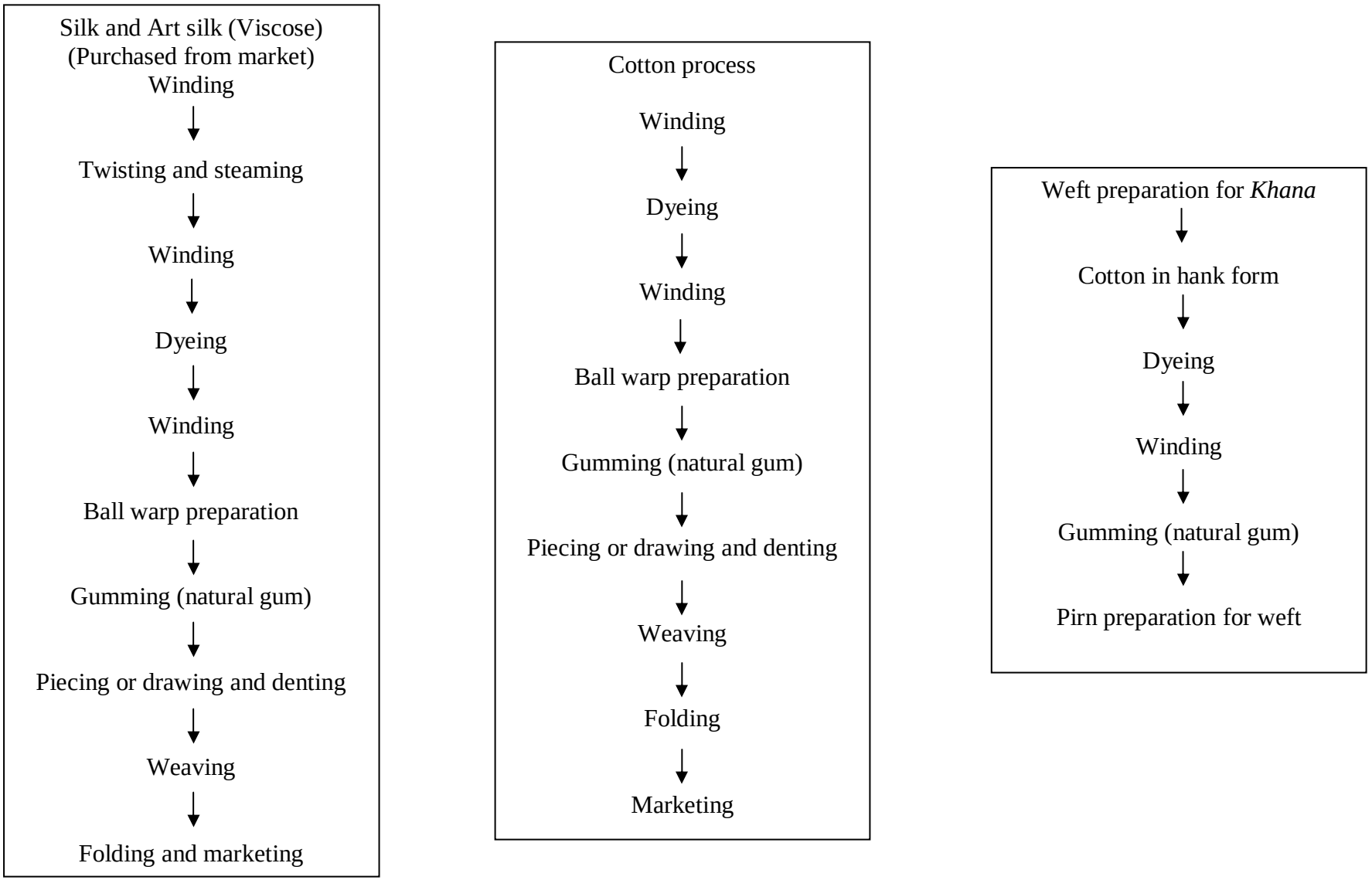



**Fig. 3. Weaving process of *Khana* Material**

Suryanaran, Tulsi pan, Sooji Malige, Chitramala, Siddheswarmukuta, Double Hardy, Tiruki Kavale Hoovu, Single Hardy and Anne Hejji (Plate 2a and 2b). Each motif is having its own significance and mythological meaning (Table 1). Most of the designs of the Guledgudda *Khana* are replicates of Suryanarayana: the face of Sun God, Siddeswarmukuta: the face of Siddeswar God, Theru: the Chariot, Ane Hejje: the footsteps of elephant, Tulsi Pan: the Tulsi leaf and Sooji Mallige: a fragrance giving flowers, Tiruki Kavale Hoovu: flower used for worshiping God, Single Hardi: single fold and Double Hardy: two fold.

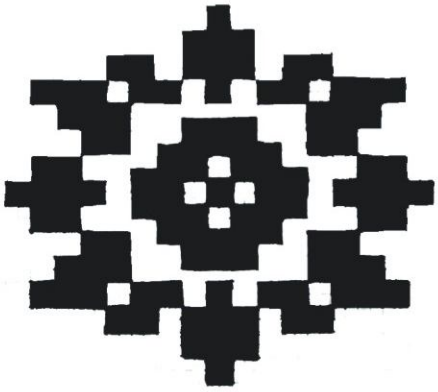
The Guledgudda *Khana* weavers produce variegated designs on the fabrics. Table-2 shows the type of motifs used by the *Khana* weavers. Half (50 %) of the weavers used traditional motifs, followed by stylized motifs (26.67 %) and 23.33 per cent of weavers used combination of traditional and stylized motifs.

Table 3 shows the designs produced on *Khana* materials. Totally ten traditional motifs, seven stylized motifs and twelve combinations of traditional and stylized motifs were adopted by the Guledgudda *Khana* weavers for designing *khana* material.

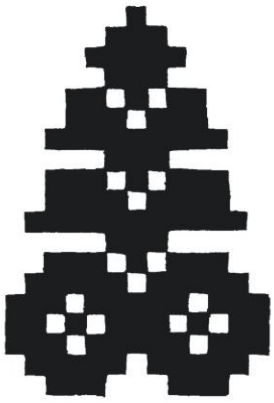
In Guledgudda, most of the weavers weave blouse materials and saree and very few weave dress materials (Plate 3 and 4). The woven material has border on both sides ranging from 15 to 23 centimeter in width, with two strips of extra warp figuring all along its length. The *Khana* materials were woven on powerloom using silk warp and cotton weft and each of these *Khana* piece were of about 80 centimeter widths and 50 centimeter lengths.

It is observed from Table 4 that, majority (73.33 %) of the *Khana* weavers use cotton polyester blend yarns for weaving blouse material, followed by 70 per cent of weavers use only polyester yarns for producing blouse material. However 56.67 per cent of weavers manufacturing sarees with polyester yarns and 43.33 per cent of them used cotton yarns. Whereas, 26.67 per cent of weavers produced dress materials with cotton yarns and 20 per cent used cotton polyester blend yarns for manufacturing dress materials.

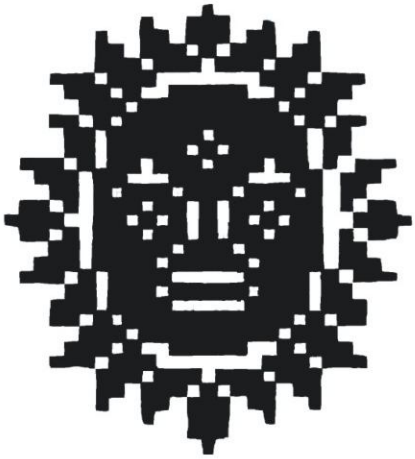
Table 5 shows the fabric details of *Khana* material. All the *Khana* materials were woven on powerloom having a reed count of 74, 34 and 80 per inch for saree,



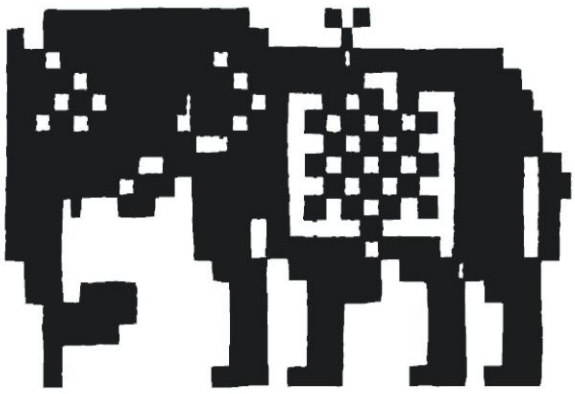
Chitramala



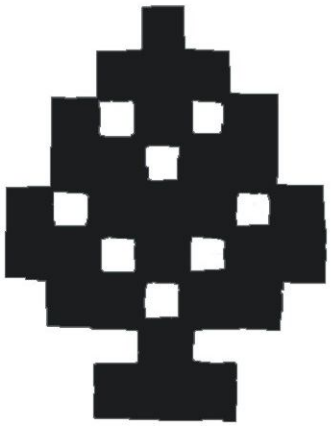
Theru



Suryanarayana



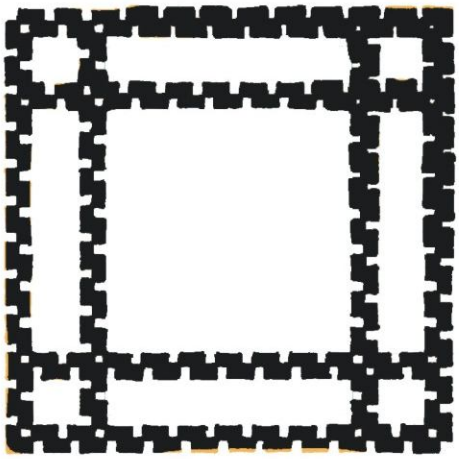
Anne Hejji



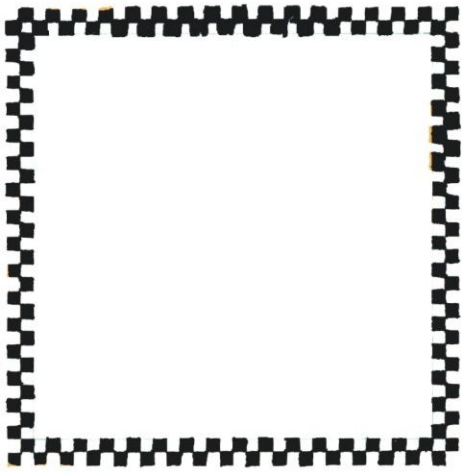
Tulsi Pan

Tiruke Kavale Hoovu

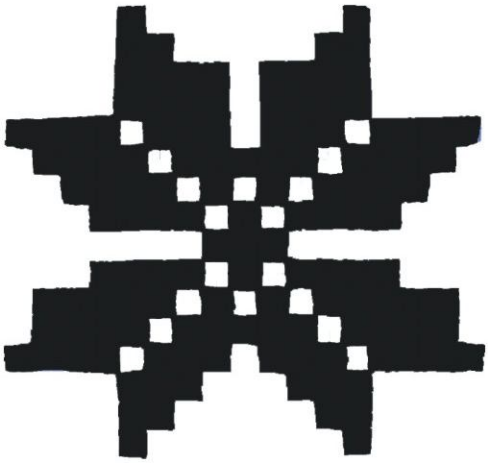
**Plate 2a. Ethnic *Khana* motifs**



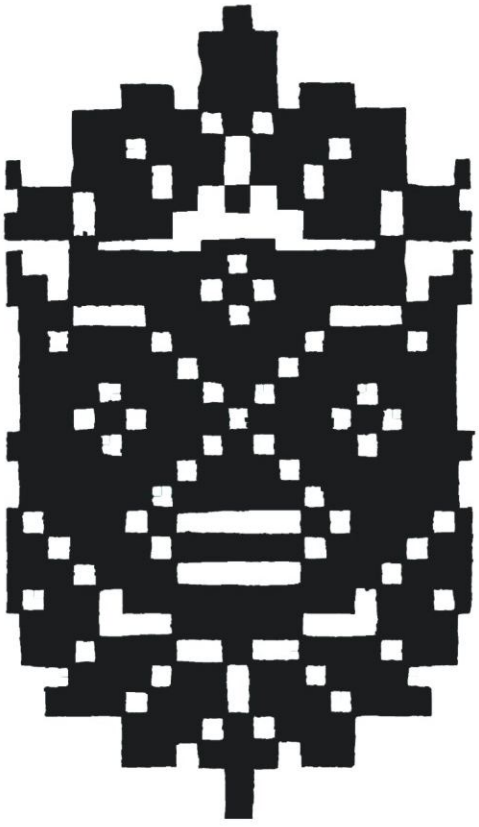
Double Hardy



Single Hardi



Sooli malige



Siddheswarmukuta

**Plate 2b. Ethnic *Khana* motifs**

**Table 2: Type of motifs used by the *Khana* weavers**

**N=30**

| Sl. No. | Designs produced | Total |
|---|---|---|
| 1 | Traditional | 15 (50.00) |
| 2 | Stylized | 08 (26.67) |
| 4 | Combination of the above | 07 (23.33) |

Figures in parenthesis indicate percentages

**Table 3: Designs produced on *Khana* material by the *Khana* weavers**

| Sl. No. | Traditional motifs | Stylized motifs | Combination of motifs |
|---|---|---|---|
| 1 | Chitramala | Rudrakshya | Tiruki Kavale Hoovu and Single Hardi |
| 2 | Theru | Navalipari | Ane Hejje and Double Hardy |
| 3 | Suryanarayana | Badnivija | Badni bija and Sooji Mallige |
| 4 | Ane Hejje | Yalaki kalvar | Chovli vali and Chitramala |
| 5 | Tulsi Pan | Chovli vali | Kalvar karmantike and Yalaki kalvar |
| 6 | Tiruki Kavale Hoovu | Kalvar karmantike | Rudrakshya and Chovli vali |
| 7 | Double Hardy | Badni bija | Yalaki kalvar and Sooji Mallige |
| 8 | Single Hardi | - | Rudrakshya and Badnivija |
| 9 | Sooji Mallige | - | Badnivija and Siddeshwar Mukuta |
| 10 | Siddeshwar Mukuta | - | Tiruki Kavale Hoovu and Rudrakshya |
| 11 | - | - | Suryanarayana and Chitramala |
| 12 | - | - | Yalaki kalvar and Ane Hejje |

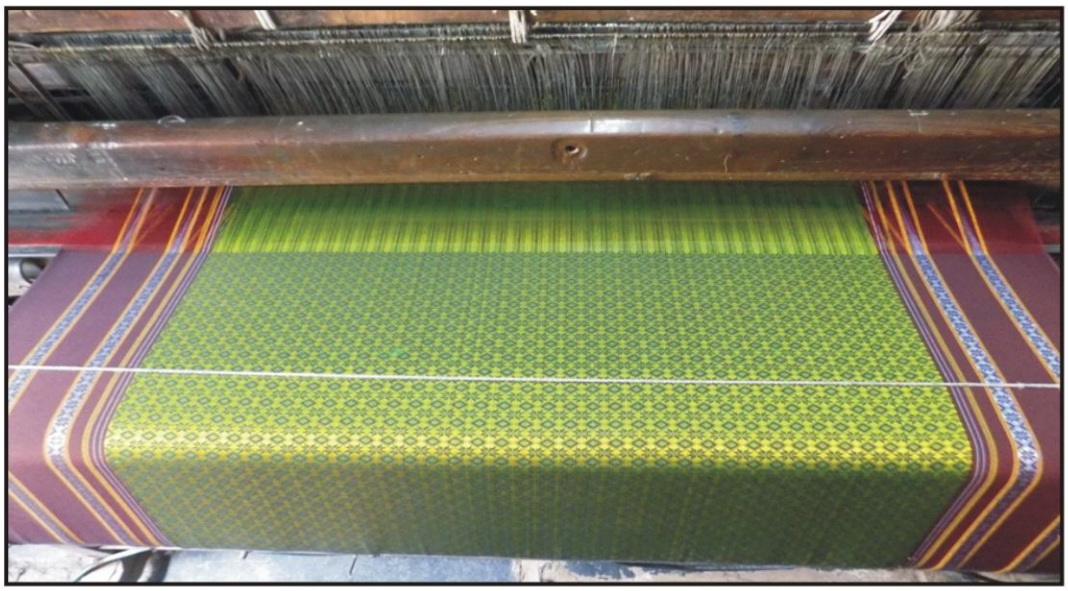


**Plate 3. *Khana* Blouse material**

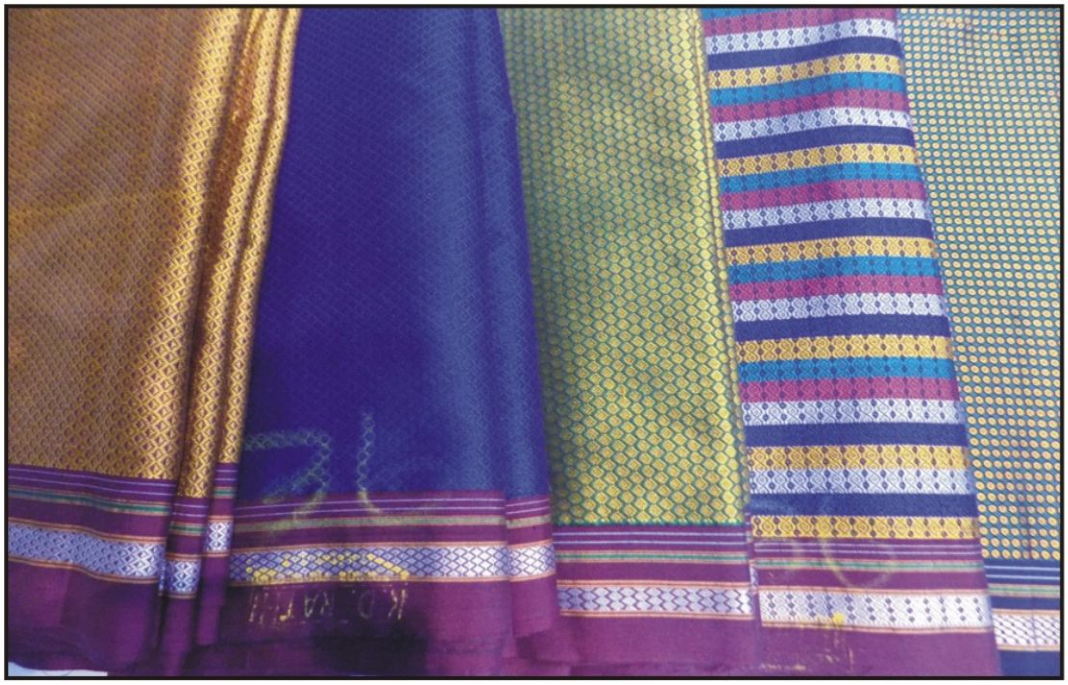


**Plate 4. *Khana* sarees and dress materials**

**Table 4: Type of fibre content used for manufacturing *Khana* materials**

**N=30**

| Sl. No. | Products / Fibres used | Sarees | Blouse Material | Dress material |
|---|---|---|---|---|
| 1 | Cotton | 13 (43.33) | 18 (60.00) | 08 (26.67) |
| 2 | Silk | 04 (13.33) | 04 (13.33) | - |
| 3 | Polyester | 17 (56.67) | 21 (70.00) | - |
| 4 | Rayon | 12 (40.00) | 09 (30.00) | - |
| 5 | Cotton/ Polyester | 07 (23.33) | 22 (73.33)) | 06 (20.00) |

Figures in parenthesis indicate percentages
Multiple responses possible

**Table 5: Fabric details of *Khana* material**

| Sl. No. | Material type | Reed count/ inch | Type of weave used | Yarn type | Threads/inch | | Length of material (m) | Length | | | | Width of material (m) | Width of Border (m) | Total weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Ends | Picks | | Pallav (m) | Kameez (m) | Salwar (m) | Dupatta (m) | | | |
| 1. | Saree | 74 | Plain weave with extra warp figuring | 2 ply yarn | 96 | 64 | 5.80 | 1.20 | - | - | - | 1.50 | 0.63 | 1000 |
| 2. | Blouse | 34 | | | | | 0.50 | - | - | - | - | 0.80 | 0.63 | 250 |
| 3 | Dress material | 80 | | | | | 6.25 | - | 2.25 | 2.00 | 2.00 | 1.50 | 0.63 | 1200 |

blouse and dress material respectively. The base warp produced plain weave, whereas extra warp produced dobby figuring by employing double dobby attachment to the loom and woven either with 2/80s cotton mercerised and 2/100d silk yarns. The ends (96/inch) and picks (64/inch) for each saree, blouse and dress material remained same but the length of the dress materials is bigger than blouse and saree. In case of saree the total length of the saree is 5.80 meter, with pallav 1.20 meter. Whereas, the length of the blouse material is of 0.50 meter. In case of dress material the total length of the total material is 6.25 meter, consisting of kameez is 2.25 meter, salwar 2.00 meter and dupatta is 2.00 meter. However, the width of saree is 1.50 meter, blouse 0.80 meter and dress material 1.50 meter with 0.63 meter border width for all of three materials. The total weight of the saree, blouse and dress materials was found to be 1,000, 250 and 1,200 grams respectively.

## 4.2 Demographic characteristics of *Khana* weavers

The demographic characteristics of the *Khana* weavers includes according to their age, gender, education, family type, family size and annual income.

From Table 6(a) it is found that, majority of the weavers belonged to middle age group (63.33 %) *i.e.,* between 30-55 years followed by 26.67 per cent belonged to age group of more than 55 years (old age). Whereas only 10 per cent of weavers belonged to young age group *i.e.,* less than 30 years.

Table 6(b) reveals the gender of *Khana* weavers. Majority of the weavers were male (83.33 %) and rest weavers were females.

It is seen from table 6(c) that, 40 per cent of the *Khana* weavers had an education upto secondary level (8-10 standard) followed by weavers having education upto primary level (36.67 %) *i.e.,* 1-7 standards. However only 13.33 per cent of weavers had education upto higher secondary level, 6.67 per cent of weavers were illiterate and only 3.33 per cent were degree holders.

From the table 6(d) it was noticed that, majority of the *Khana* weavers belonged to joint family type (70.00 %) and rest from nuclear family type.

**Table 6: Demographic characteristics of the weavers**

**N=30**

| Sl. No. | Variables | No. of respondents (%) |
|---|---|---|
| **a.** | **Age** | |
| **1.** | Young (< 30years) | 03 (10.00) |
| **2.** | Middle (30-55 years) | 19 (63.33) |
| **3.** | Old (> 45 years) | 08 (26.67) |
| **b.** | **Gender** | |
| **1.** | Male | 25 (83.33) |
| **2.** | Female | 05 (16.67) |
| **c.** | **Education** | |
| **1.** | Illiterate | 02 (06.67) |
| **2.** | Primary (1 -7 standard) | 11 (36.67) |
| **3.** | Secondary (8 -10 standard) | 12 (40.00) |
| **4.** | Higher secondary (PUC standard) | 04 (13.33) |
| **5.** | Degree and above (UG and PG standard) | 01 (03.33) |
| **d.** | **Type of family** | |
| **1.** | Nuclear | 09 (30.00) |
| **2.** | Joint | 21 (70.00) |
| **e.** | **Family size** | |
| **1** | Small (≤ 4 members) | 07 (23.33) |
| **2** | Medium (5 -9 members) | 19 (63.33) |
| **3** | Large (> 9 members) | 04 (13.33) |
| **f.** | **Annual Income (in Rs)** | |
| **1.** | Low Income ( Rs. < 20,000) | 16 (53.33) |
| **2.** | Middle income (Rs. 20,001-Rs. 40,000) | 12 (40.00) |
| **3.** | High income (Rs. > 40,001) | 02 (06.67) |

Figures in parenthesis indicate percentages

**Table 7: Type of weavers manufacturing *Khana* materials**

**N=30**

| Sl No. | Type of weaver | Total |
|---|---|---|
| 1 | Master weaver (> 6 looms) | 05 (16.67) |
| 2 | Independent weaver (< 6 looms) | 23 (76.67) |
| 3 | Wage worker | 02 (06.67) |

Figures in parenthesis indicate percentages

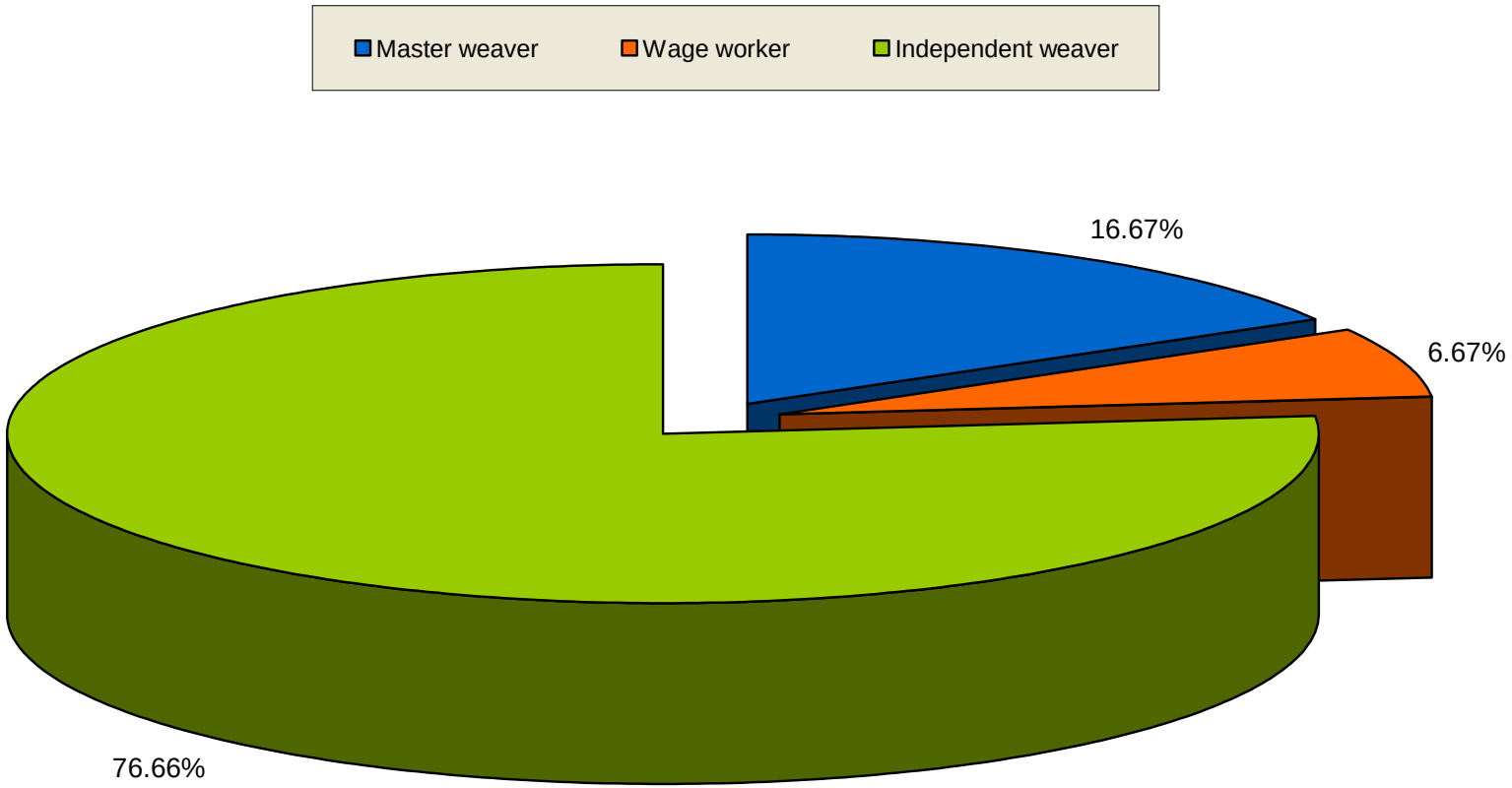



**Fig. 4. Type of weavers manufacturing *Khana* materials**

**Table 8: Total working hours of *Khana* weavers**

**N=30**

| Sl No. | Working hours/ day | Total |
|---|---|---|
| 1 | 4 hours | 05 (16.67) |
| 2 | 6 hours | 10 (33.33) |
| 3 | 8 hours | 15 (50.00) |
| 4 | 10 hours | - |
| 5 | 12 hours | - |

Figures in parenthesis indicate percentages

Majority of the weavers belonged to medium family size (63.33 %) consisting of 5-9 members in the family, followed by 23.33 per cent were belonged to small family size having members upto 4. However 13.33 per cent of the weavers belonged to large family size (Table 6e).

It is seen from table 6(f) that, 53.33 per cent of the *Khana* weavers belonged to low income group (less than Rs 20,000/annum), followed by 40 per cent of middle income group (Rs 20,001/annum to Rs 40,000/annum). However, only 6.67 per cent of weavers belonged to high income group (Rs 40,001/annum).

It is observed from Table 7 and Figure 4 that, majority of the *Khana* weavers were independent weavers (76.67 %), followed by master weavers (16.67 %). However 6.67 per cent of the weavers were wage workers.

Table 8 shows the total working hours of the *Khana* weavers, where most of the weavers (50.00 %) were working for 8 hours, followed by 10 percent who worked for 6 hours and a few of them (16.67 %) worked for 4 hours per day. However no wavers worked more than 8 hours/ day on powerloom.

## 4.3 Procurement of raw materials, motifs and source of marketing

### 4.3.1 Procurement of raw material

Table 9 shows the source of procurement and mode of payment for purchase of raw materials. Majority of the weavers procure raw materials from master weavers (60.00 %) in exchange of finished goods, followed by 23.33 per cent who procured raw materials from KHDC (Karnataka Handloom and Development Corporation) on partial payment. Whereas remaining 16.67 per cent of weavers procured raw materials from local dealers in exchange of cash.

### 4.3.2 Procurement of *Khana* motif

Majority of the weavers agreed that they procure the motifs from master weavers (40.00 %), followed by from old samples (36.67 %) and some of them used to procure from KHDC (Table 10). Whereas, none of them procured *Khana* motifs from

**Table 9: Source of procurement and mode of payment for purchase of raw materials**

**N=30**

| Sources of procurement / Mode of payment | Local dealer | Master weaver | KHDC |
|---|---|---|---|
| On cash | 05 (16.67 ) | - | - |
| On credit | - | - | - |
| In exchange of finished goods | - | 18 (60.00) | - |
| On partial payment | - | - | 07 (23.33) |
| Instalment payment | - | - | - |

Figures in parenthesis indicate percentages

**Table 10: Procurement of *Khana* motifs for manufacturing *Khana* materials**

**N=30**

| Sl. No. | Source | Always | Sometimes | Never | Weighted mean score |
|---|---|---|---|---|---|
| 1 | Self creation | - | - | 30 (100.00) | 1.00 |
| 2 | Customers | - | - | 30 (100.00) | 1.00 |
| 3 | Master weavers | 12 (40.00) | 06 (20.00) | 12 (40.00) | 2.00 |
| 4 | KHDC | - | 01 (3.33) | 29 (96.67) | 1.03 |
| 5 | Books/ Magazines | - | - | 30 (100.00) | 1.00 |
| 6 | Old samples | 11 (36.67) | 07 (23.33) | 12 (40.00) | 1.96 |

Figures in parenthesis indicate percentages
Multiple responses possible

books or magazines and also created motif by their own. The Weighted Mean Scores obtained for master weaver is high (2.00), followed by old samples (1.96).

### 4.3.3 Source of marketing

Table 11, depicts the sources of marketing of *Khana* material. It is found that, majority of the weavers sold their *Khana* materials to master weavers (60.00 %), followed by 23.33 per cent to KHDC (Karnataka Handloom and Development Corporation), while only 16.67 per cent of weavers sold to wholesalers.

## 4.4 Problems faced by the weavers

Various problems encountered by the weavers of Guledgudda while procuring raw material, processing and during marketing.

### 4.4.1 Problems faced during procurement of raw material

Table 12 depicts the problems faced by the *Khana* weavers while procuring raw material. Majority of the weavers faced the problems of hike in price (60.00 %) while procuring raw materials, followed by non availability of required yarn counts (50.00 %) and non availability of adequate quantities of raw materials (40.00 %). The Weighted Mean Scores (WMS) shows higher in hike in price of raw material (2.46), followed by of non availability of required yarn counts (2.26) then non-availability in adequate quantities of raw material (2.23) and the least score is scored by untimely supply of raw materials from the master weavers (2.03).

### 4.4.2 Problems faced during marketing of *Khana* materials

Table 13 shows the problems faced during marketing of *Khana* materials. Majority of the *Khana* weavers faced the problems of repairs and maintenance of powerloom while weaving (53.33 %), followed by lack of publicity of finished goods (40.00 %) and hike in transportation charges as well as non profitable labour (33.33 %). Whereas, the highest mean score is obtained by repair and maintenance of powerloom (2.26) followed by lack of publicity of finished goods (2.03) then hike in transportation (1.90) and lowest score is obtained by lack of demand from the consumer (1.67).

**Table 11: Sources of marketing of *Khana* material**

**N=30**

| Source | Total |
|---|---|
| Master weavers | 18 (60.00) |
| Wholesalers | 05 (16.67 ) |
| KHDC (Karnataka Handloom and Development Corporation) | 07 (23.33) |
| Consumers | - |

Figures in parenthesis indicate percentages

**Table 12: Problems faced by the *Khana* weavers while procuring raw material**

**N=30**

| Sl. No. | Problems | Always | Sometimes | Never | Weighted mean score |
|---|---|---|---|---|---|
| 1 | Untimely supply | 11 (36.67) | 09 (30.00) | 10 (33.33) | 2.03 |
| 2 | Non-availability in adequate quantities | 12 (40.00) | 13 (43.33) | 05 (16.67) | 2.23 |
| 3 | Hike in price | 18 (60.00) | 08 (26.67) | 04 (13.33) | 2.46 |
| 4 | Non availability of pure yarns | 10 (33.33) | 14 (46.67) | 06 (20.00) | 2.13 |
| 5 | Non availability of required yarn counts | 15 (50.00) | 08 (26.67) | 07 (23.33) | 2.26 |

Figures in parenthesis indicate percentages

Multiple responses possible

**Table 13: Problems faced by the *Khana* weavers during marketing of *Khana* materials**

**N=30**

| Sl. No. | Constraints | Always | Sometimes | Never | Weighted mean score |
|---|---|---|---|---|---|
| 1 | Lack of demand | 07 (23.33) | 06 (20.00) | 17 (56.67) | 1.67 |
| 2 | Non- profitable labour | 10 (33.33) | 06 (20.00) | 14 (46.67) | 1.86 |
| 3 | Hike in transportation charges | 10 (33.33) | 07 (23.33) | 13 (43.33) | 1.90 |
| 4 | Repair and maintenance of powerloom | 16 (53.33) | 06 (20.00) | 08 (26.67) | 2.26 |
| 5 | Lack of publicity | 12 (40.00) | 07 (23.33) | 11 (36.67) | 2.03 |

Figures in parenthesis indicate percentages

Multiple responses possible

### 4.4.3 Problems faced before and after loom process

Table 14 depicts the comparison between problems faced by the weaver before and after loom process. Majority of the weavers faced problems like hike in price (86.67 %) for the raw materials before loom process, followed by non-availability in adequate quantities of raw material (83.33 %). Whereas, 63.33 per cent of weavers faced problems for repair and maintenance of powerloom, followed by hike in transportation charges (56.67 %) after loom process. The chi- square values were highly significant in both the cases of problems faced before loom process and after loom process.

### 4.4.4 Health problems faced by the *Khana* weavers

It is found from Table 15 and Figure 5 that, majority of wavers faced the problem of back pain (76.67 %), followed by eyesight weakness (70.00 %), dust allergy (40.00 %). However, 26.67 per cent of them faced the problem of joint pain.

Table 16 reveals the association between weaver's health condition with age and working hours. The chi-square values are significant in case of age with eye sight weakness and joint pain, whereas highly significant in case of age with back pain and non-significant in case of age with dust allergy. Meanwhile chi-square values are significant in working hours with eye sight weakness and dust allergy, whereas highly significant with joint pain and back pain.

## 4.5 Selection, digitization and development of designs

### 4.5.1 Selection and resizing of *Khana* motifs

There are many stylized, contemporary and traditional *Khana* motifs available on the textiles. The available ten ethnic *Khana* motifs were selected and resized according to the requirement and significance were documented (Table 1).

### 4.5.2 Designing of *Khana* kurtis

The ten available and resized *Khana* motifs were utilised for development of twenty kurti designs using Adobe Photoshop by applying elements and principles of design (Fig. 2). The motifs were arranged in a line at the border and at the centre front

**Table 14: Comparison between problems faced by the weaver before and after loom process**

**N=30**

| **Problems faced before loom process** | | **Problems faced after loom process** | |
|---|---|---|---|
| **Problems** | **No. of respondents** | **Problems** | **No. of respondents** |
| Untimely supply | 20 (66.67) | Lack of demand | 13 (43.33) |
| Non-availability in adequate quantities | 25 (83.33) | Non- profitable labour | 14 (46.67) |
| Hike in price | 26 (86.67) | Hike in transportation charges | 17 (56.67) |
| Non availability of pure yarns | 24 (80.00) | Repair and maintenance of powerloom | 19 (63.33) |
| Non availability of required yarn counts | 23(76.67) | Lack of publicity | 16 (53.33) |
| Calculated $X^2$ value | 60.31** | Calculated $X^2$ value | 18.51** |

Figures in parenthesis indicate percentages

Multiple responses possible

* Significant at 5 per cent level

** Significant at 1 per cent level

**Table 15: Health problems faced by the Guledgudda *Khana* weavers**

**N=30**

| Sl. No. | Type of problems | No. of respondents (%) |
|---|---|---|
| 1 | Eyesight weakness | 21 (70.00) |
| 2 | Joint pain | 08 (26.67) |
| 3 | Dust allergy | 12 (40.00) |
| 4 | Back pain | 23 (76.67) |

Figures in parenthesis indicate percentages
Multiple responses possible

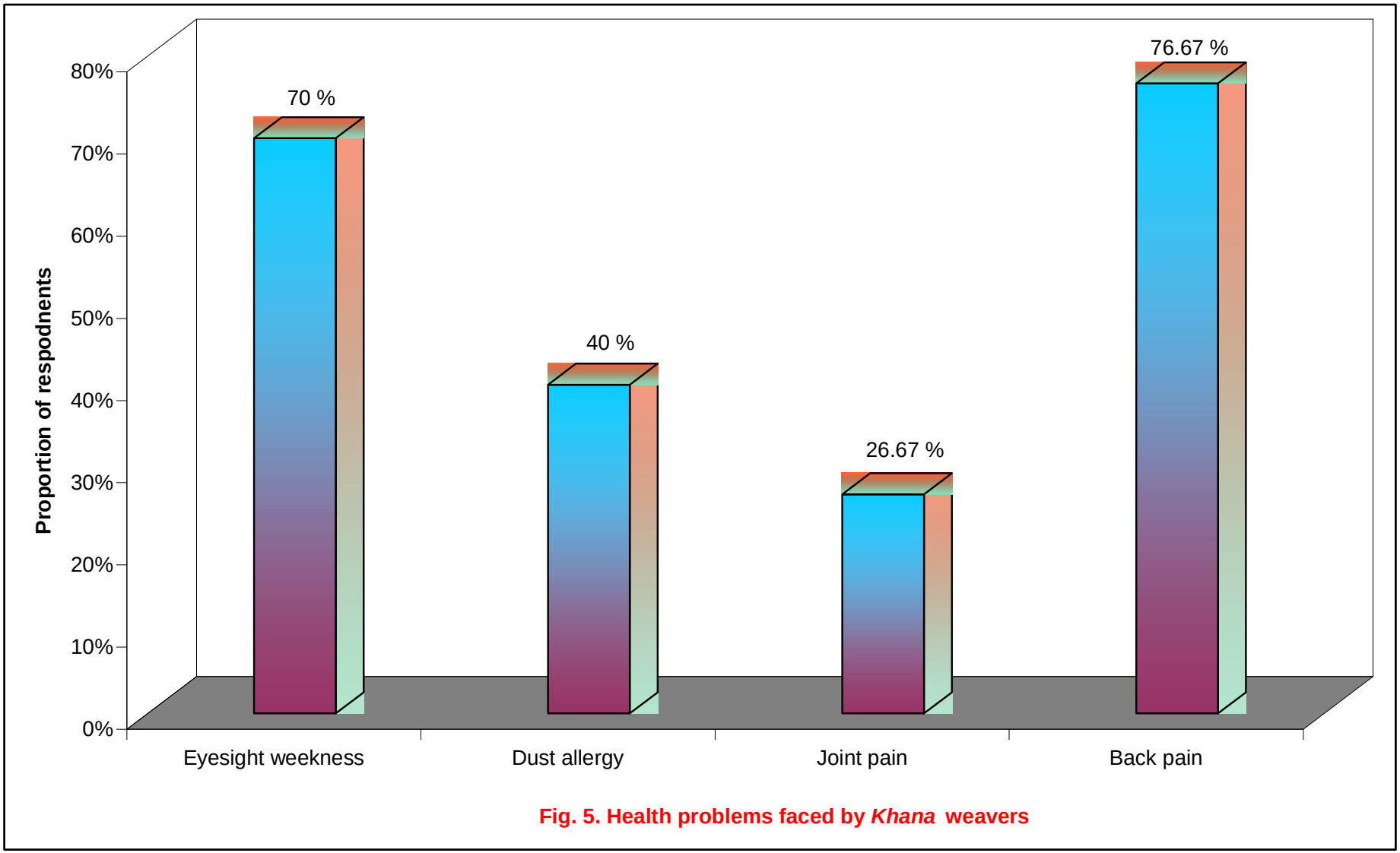



**Fig. 5. Health problems faced by *Khana* weavers**

**Table 16: Association between weaver's health condition with age and working hours**

**N=30**

| Health aliments | Age | | | Total | $X^2$ values | Working hours | | | Total | $X^2$ values |
|---|---|---|---|---|---|---|---|---|---|---|
| | < 30 years | 30-55 years | > 55 years | | | 4-7 | 8-11 | 12 and more | | |
| Eye sight weakness | - | 15 (50.00) | 06 (20.00) | 21 (70.00) | 13.50* | 03 (10.00) | 18 (60.00) | - | 21 (70.00) | 12.5* |
| Joint pain | - | 07 (23.33) | 01 (03.33) | 08 (26.67) | 9.53* | 01 (03.33) | 07 (23.33) | - | 08 (26.67) | 15.14** |
| Dust allergy | 02 (06.67) | 06 (20.00) | 04 (13.33) | 12 (40.00) | $4.44^{NS}$ | 01 (03.33) | 11 (36.67) | - | 12 (40.00) | 9.49* |
| Back pain | 01 (03.33) | 17 (56.67) | 08 (26.67) | 26 (86.67) | 16.20** | 03 (10.00) | 23 (76.67) | - | 26 (86.67) | 17.39** |

Figures in parenthesis indicate percentages

Multiple responses possible

* Significant at 5 per cent level

**Significant at 1 per cent level

designs by increasing the size according to the requirement. Proportion was maintained in between the spaces of centre front design. The colours of motifs were kept constant with golden colour to emphasize them on the dress materials. The motifs were placed harmonically at the border of the dress material by repetition. In the neck with border designs balance was inbuilt for the viewer with maintaining equal amount of space in both sides. An increase in the texture of the fabric was made by changing the denting pattern *i.e.*, three threads per dent. A careful planning and grouping the motifs into borders and along the body was made to create a pleasing harmony within the pattern considering the motif size, form and type. A total five patterned designs were followed in developing the above twenty designs *i.e.,* only border designs, border with butta designs, upper border designs, centre front designs and neck with border designs.

### 4.5.2 Selection of designs for kurtis

Thirty textile experts rated these twenty developed *Khana* kurti designs. A five point scale questionnaire was administered to the respondents to rate the kurti designs *viz.*, Excellent, Very Good, Good, Fair and Poor, considering the parameters motif clarity, colour combination and overall appearance.

The collected data was analyzed with frequencies and then the Weighted Mean Score (WMS) was calculated by scoring Excellent as 5, Very Good – 4, Good – 3, Fair - 2 and Poor - 1 *i.e.*, better the ranking, higher is the score.

Table 17 and Fig. 6, shows the preference for *Khana* kurti designs by the textile experts. It is observed from the above table that rank I is scored by kurti design no. 17 *i.e.* kurti with border and neck design having Sidheswarmukuta and Theru motif, followed by kurti design no. 8 with Anne Hejji and Chitramala motif, then rank three is obtained by kurti with centre front design with Chitramala and Tulsi pan motif, and last rank is obtained by kurti with border design having Suryanarayan and Tulsi pan motif. These five kurti designs were selected for weaving (Plate 5a to 5e).

### 4.5.3 Digitizing the selected *Khana* designs for kurtis

The process of digitizing the motifs involve three stages, design input, design processing and design plan. The process flow of digitization using GC Kala-2004 with

**Table 17: Preference for *Khana* kurti designs by the textile experts**

**N=30**

| Kurti design | Type of design/motif | Preference | | | | | WMS | Ranks |
|---|---|---|---|---|---|---|---|---|
| | | 5 | 4 | 3 | 2 | 1 | | |
| | **Kurti with border design** | | | | | | | |
| 1 | Theru and Tulsi pan | 10 (33.33) | 13 (43.33) | 05 (16.67) | 02 (06.67) | - | 4.04 | VII |
| 2 | Theru and Anne Hejji | 02 (06.67) | 12 (40.00) | 13 (43.33) | 02 (06.67) | 01 (03.33) | 3.40 | XX |
| 3 | Tulsi pan and Soojimalige | 10 (33.33) | 10 (33.33) | 05 (16.67) | 04 (13.33) | 01 (03.33) | 3.81 | XVIII |
| 4 | Chitramala and Sidheswarmukuta | 11 (36.67) | 11 (36.67) | 07 (23.33) | 01 (03.33) | - | 4.07 | VI |
| 5 | Suryanarayan and Tulsi pan | 11 (36.67) | 14 (46.67) | 04 (13.33) | 01 (03.33) | - | 4.17 | V |
| 6 | Chitramala and Tulsi pan | 07 (23.33) | 17 (56.67) | 05 (16.67) | 01 (03.33) | - | 4.02 | IX |
| | **Kurti with border and butta design** | | | | | | | |
| 7 | Suranarayan, Theru and Siddheswarmukuta | 07 (23.33) | 13 (43.33) | 10 (33.33) | - | - | 3.90 | XVI |
| 8 | Anne Hejji and Chitramala | 11 (36.67) | 15 (50.00) | 04 (13.33) | - | - | 4.28 | II |
| | **Kurti with upper design** | | | | | | | |
| 9 | Theru, Chitramala and Suryanarayan | 13 (43.33) | 10 (33.33) | 07 (23.33) | - | - | 4.20 | IV |
| 10 | Chitramala, Siddheswarmukuta and Tulsi pan | 08 (26.67) | 13 (43.33) | 09 (30.00) | - | - | 3.97 | XIII |
| 11 | Siddheswarmukuta and Theru | 10 (33.33) | 08 (26.67) | 09 (30.00) | 02 (06.67) | 01 (03.33) | 3.80 | XIX |
| | **Kurti with centre front design** | | | | | | | |
| 12 | Chitramala and Theru | 08 (26.67) | 13 (43.33) | 09 (30.00) | - | - | 3.96 | XIV |

| Kurti design | Type of design/motif | Scores | | | | | WMS | Ranks |
|---|---|---|---|---|---|---|---|---|
| | | 5 | 4 | 3 | 2 | 1 | | |
| 13 | Soojimalige and Siddheswarmukuta | 09 (30.00) | 13 (43.33) | 06 (20.00) | 02 (06.67) | - | 3.98 | XII |
| 14 | Chitramala, Theru and Tulsi pan | 07 (23.33) | 18 (60.00) | 04 (13.33) | - | 01 (03.33) | 4.00 | XI |
| 15 | Chitramala and Tulsi pan | 11 (36.67) | 15 (50.00) | 03 (10.00) | 01 (03.33) | - | 4.21 | III |
| 16 | Suryanarayan and Tulsi pan | 07 (33.33) | 12 (40.00) | 09 (30.00) | 02 (06.67) | - | 3.82 | XVII |
| | **Kurti with border and neck design** | | | | | | | |
| 17 | Siddheswarmukuta and Theru | 20 (66.67) | 04 (13.33) | 06 (20.00) | - | - | 4.47 | I |
| 18 | Chitramala and Tulsi pan | 10 (33.33) | 11 (36.67) | 08 (26.67) | 01 (03.33) | - | 4.03 | VIII |
| 19 | Anne hejji and Tulsi pan | 07 (23.33) | 14 (46.67) | 08 (26.67) | 01 (03.33) | - | 3.91 | XV |
| 20 | Siddheswarmukuta and Tulsi pan | 09 (30.00) | 13 (43.33) | 08 (26.67) | - | - | 4.01 | X |

**Note: 5- Excellent, 4- Very good, 3- Good, 2- Fair, 1- Poor**
Figures in parenthesis indicate percentages
Multiple responses possible
WMS- Weighted Mean Scores

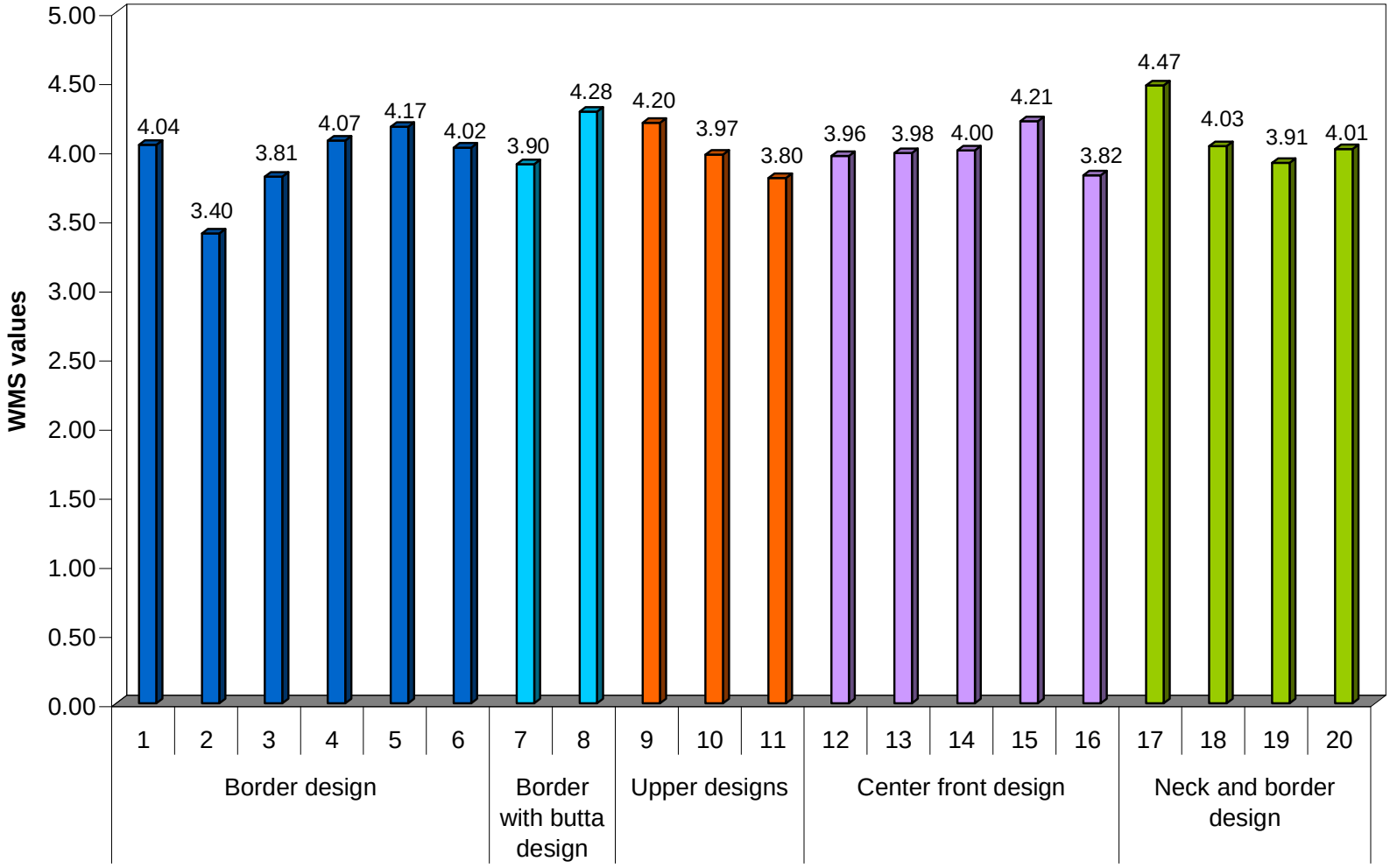



**Fig. 6. Preference for twenty developed *Khana* kurti designs**

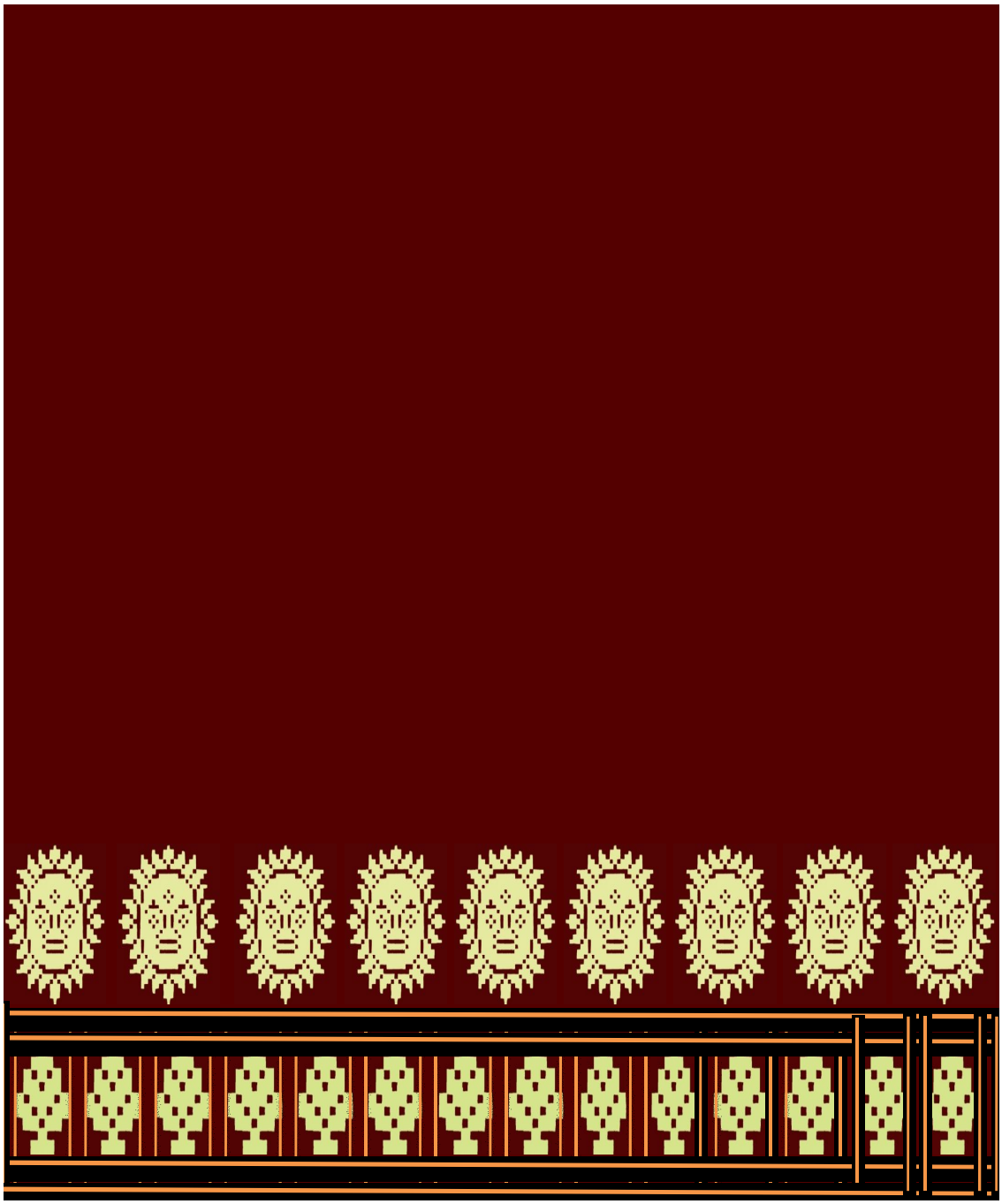


**Plate. 5a. Kurti with border design**

**<u>Motifs Used</u>:- Suryanarana and Tulsi pan with Double Hardy**

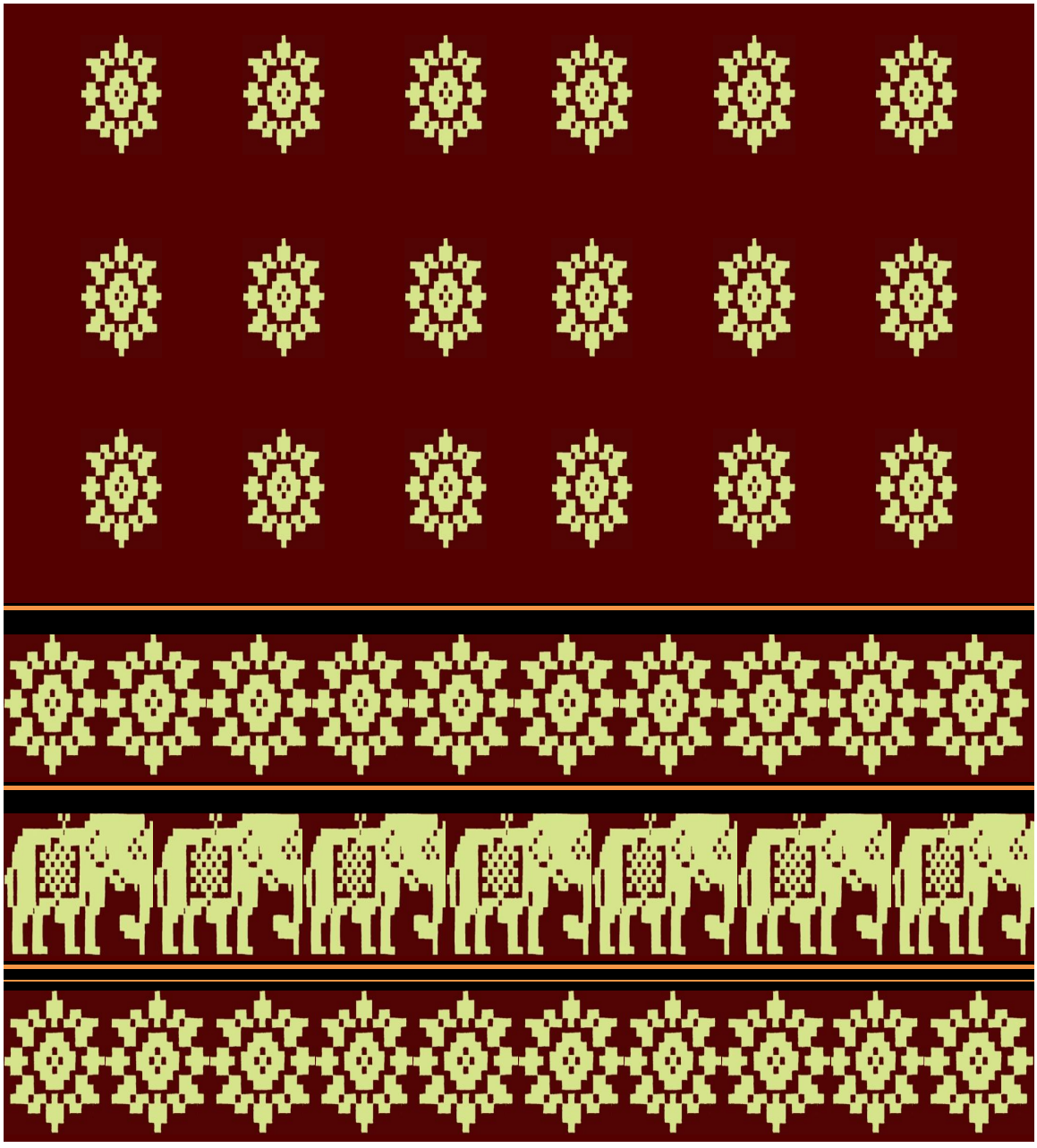


**Plate. 5b. Kurti with border and butta design**

**<u>Motifs Used</u>:- Anne Hejji and Chitramala**

**Plate. 5c. Kurti with upper design**

**<u>Motifs Used</u>:- Chitra Mala, Suryanayana and Theru**

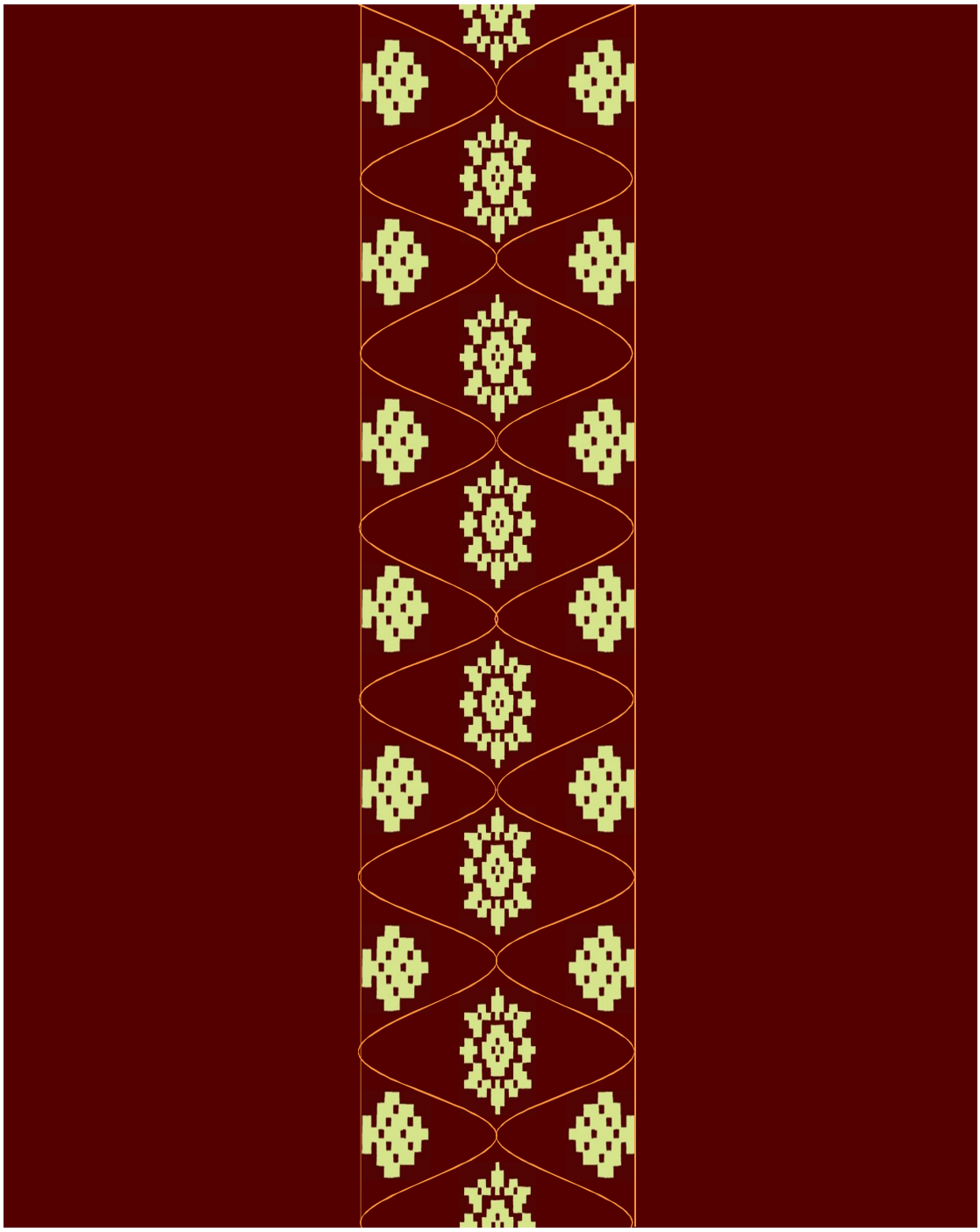


**Plate. 5d. Kurti with centre front design**

**<u>Motifs Used</u>:- Chitramal and Tulsi pan**

**Plate. 5e. Kurti with border and neck design**

**<u>Motifs Used</u>:- Sidheswarmukuta and Theru**

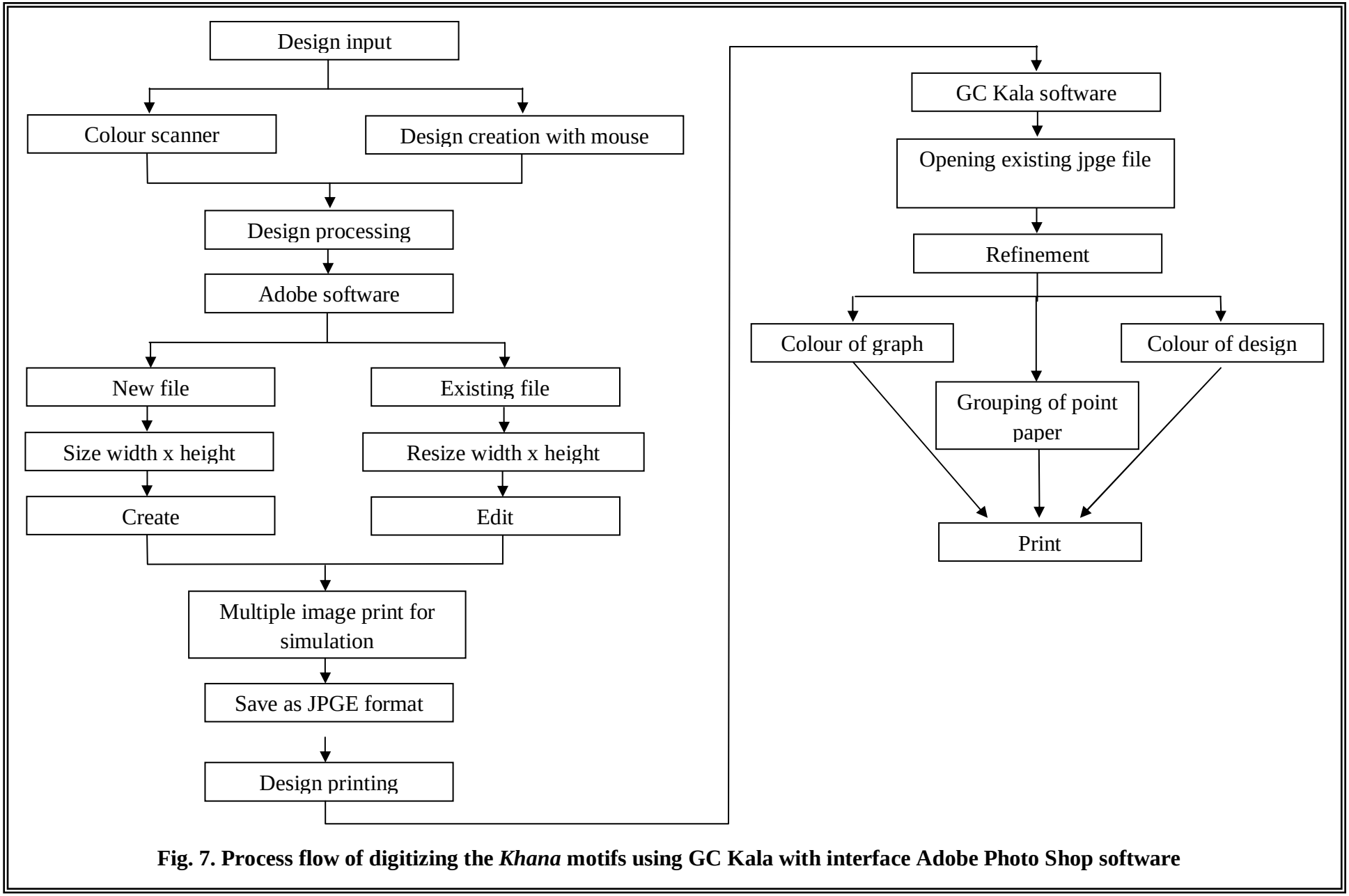



**Fig. 7. Process flow of digitizing the *Khana* motifs using GC Kala with interface Adobe Photo Shop software**

interface Adobe Photo Shop software is given in (Figure 7). The design input process involves creation of motifs using various options in computer or transfer them on the system through scanner.

Design processing is the second stage of digitization. It is done with Computer Aided Textile Designing software, Adobe Photoshop where the designer has to resize the width and height of the motif, giving the specific dimension either in centimeter or millimeter. In practice, the product of the reed count and the actual width of the motif as required on the fabric are used to create the design. For example, if a 3" x 3" motif is to be woven on the fabric with 80 ends and 66 picks/inch, then width x height for the particular motif is 180 x 150. As soon as this information is fed in the system, the bit (bmp) sheet with the above specification is ready for design creation or editing. Once the design is ready, the designer can take the simulation of the design produced or can save the same as a 'bmp' file.

The third stage of digitization *i.e.* design plan was a key process which aided in easy and speedy card punching. The existing or the newly created 'bmp' file was further refined in GC Kala-2004 software with respect to colour of the graph, design and grouping of squares. Grouping of squares on point paper depended on the capacity of jacquard.

10 x 10 squares – Normal graph

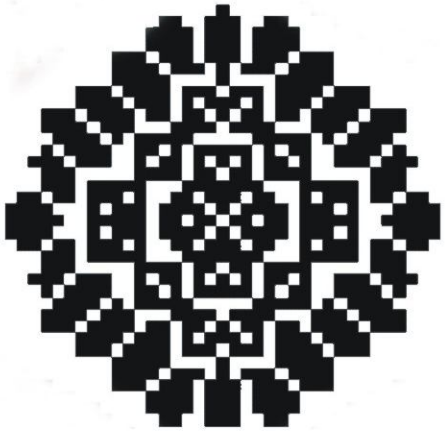
12 x 10 squares – 120 jacquard

16 x 10 squares – 172 to 400 jacquard

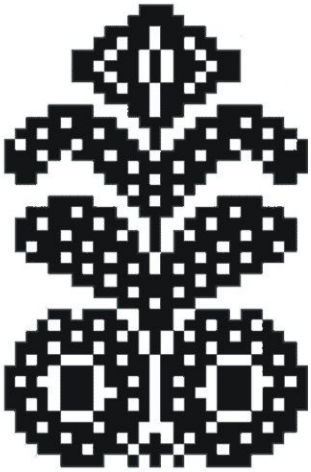
Finally, the print out of the digitized selected motifs was obtained. Plate 6a and 6b shows the simulation of the digitized motifs and corresponding Plates 7a to 7j records the design plan of ten ethnic motifs.

## 4.6 Weaving of *Khana* dress materials

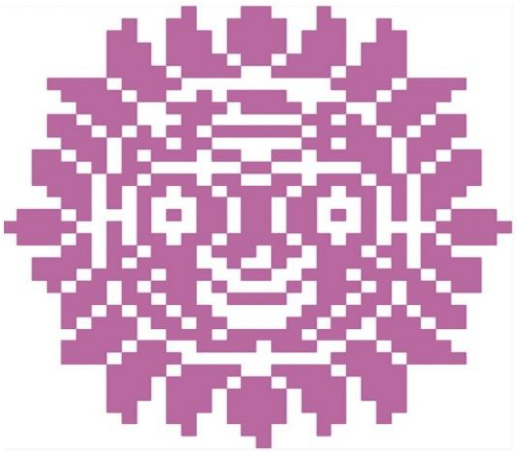
Weaving consists of three stages *i.e.,* pre-loom, loom and post loom processes which is described below.



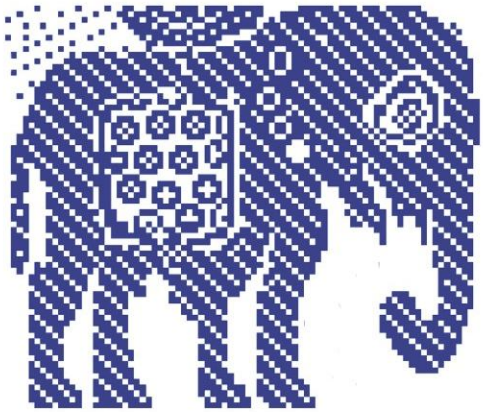
Chitramala



Theru

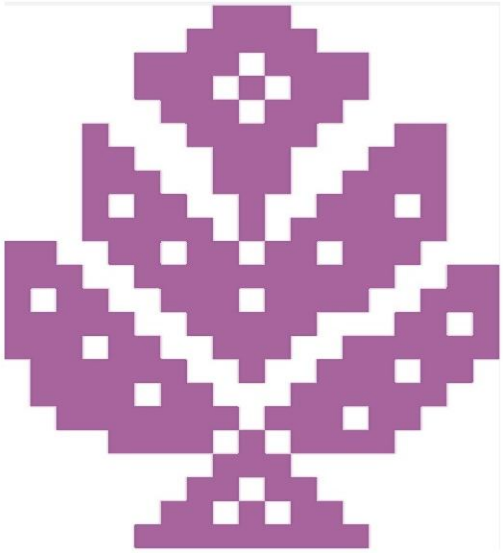


Suryanarayana

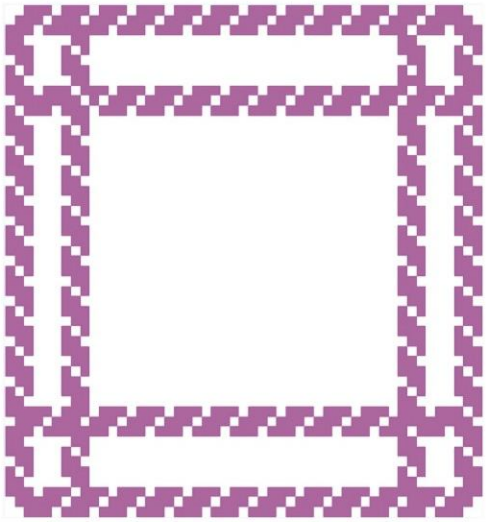


Anne Hejji

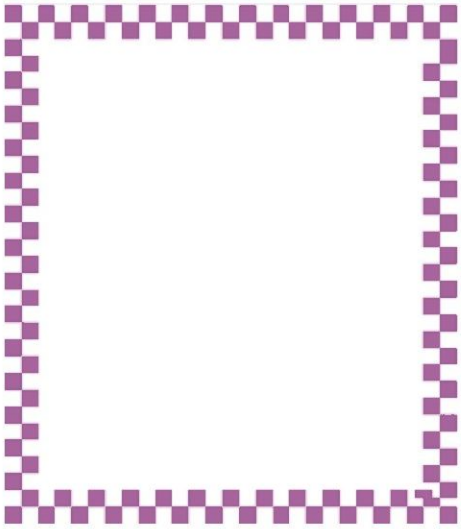
**Plate 6a. Digitized ethnic *Khana* motifs**



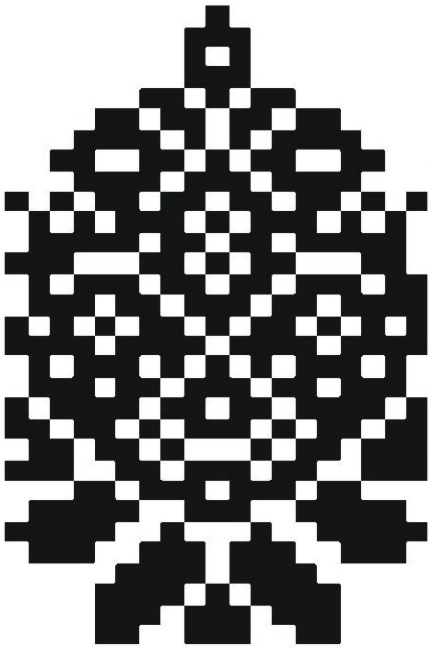
Tulsi Pan



Double Hardy



Single Hardi



Siddheswarmukuta

**Plate 6b. Digitized ethnic *Khana* motifs**

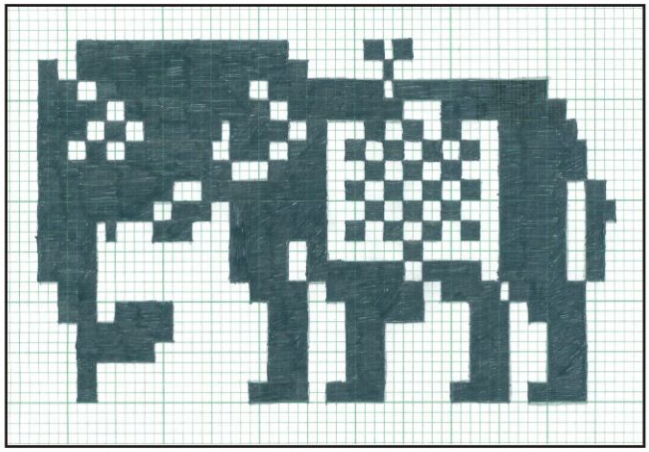


**Plate 7a. Design plan of ethnic Anne Hejji motif**

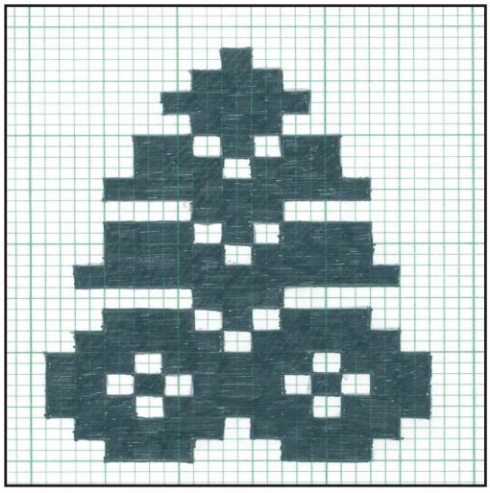


**Plate 7b. Design plan of ethnic Theru motif**

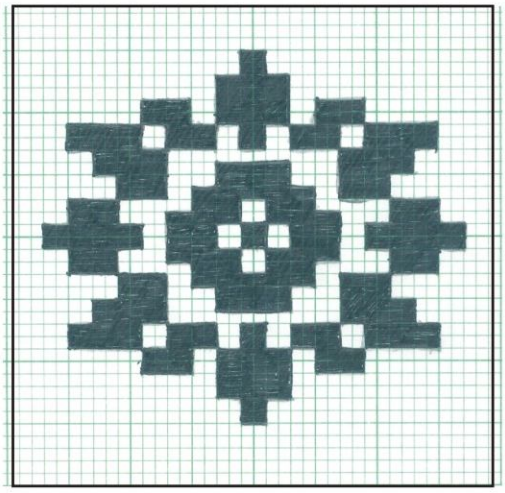


**Plate 7c. Design plan of ethnic Chitramala motif**

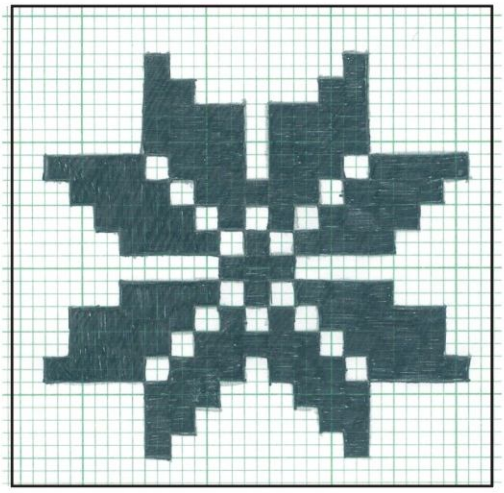


**Plate 7d. Design plan of ethnic Sooji Malige motif**

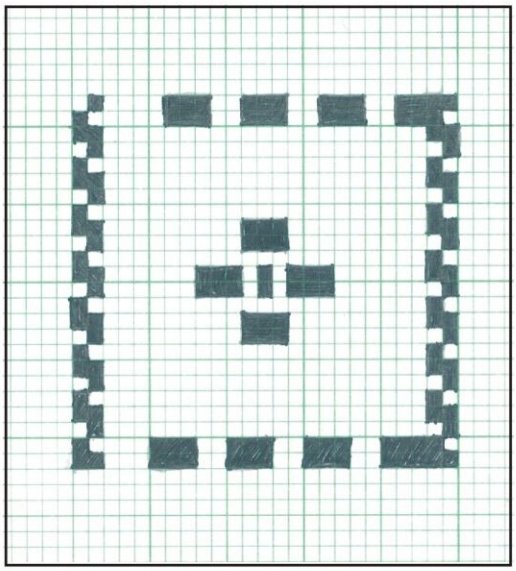


**Plate 7e. Design plan of ethnic Tiruke Kavale Hoovu motif**

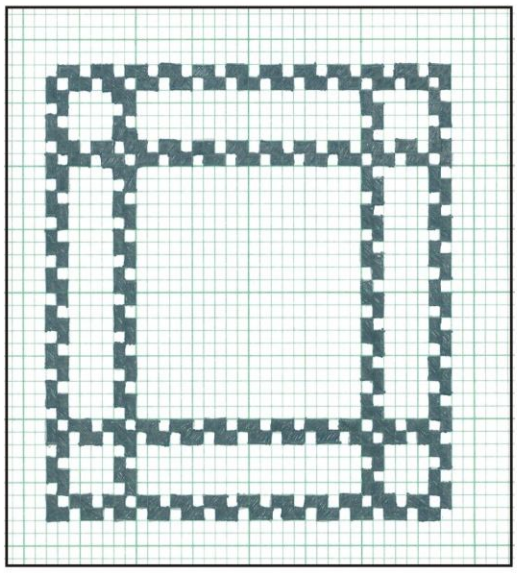


**Plate 7f. Design plan of ethnic Double Hardy motif**

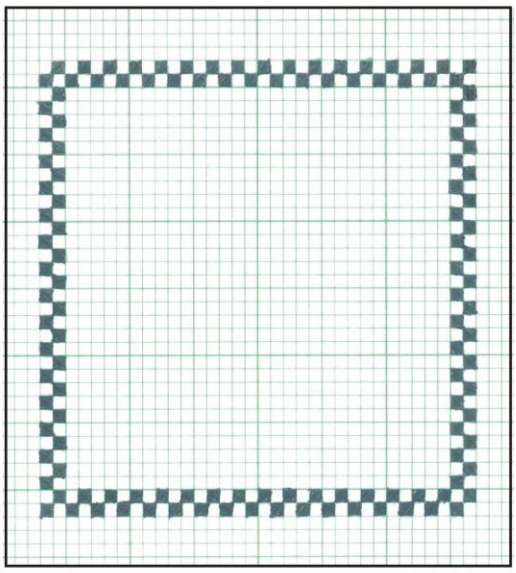


**Plate 7g. Design plan of ethnic Single Hardi motif**

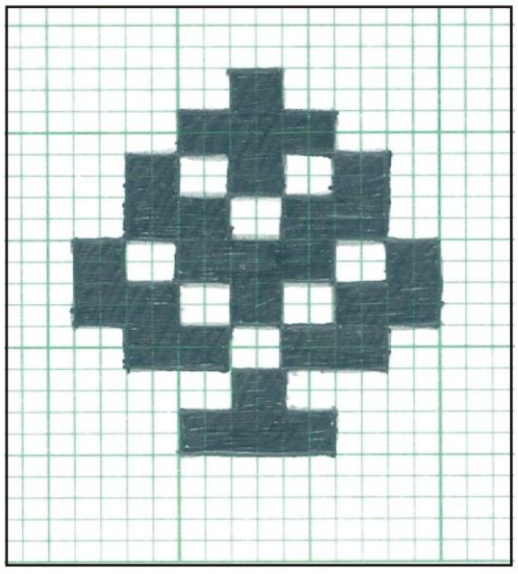


**Plate 7h. Design plan of ethnic Tulsi Pan motif**

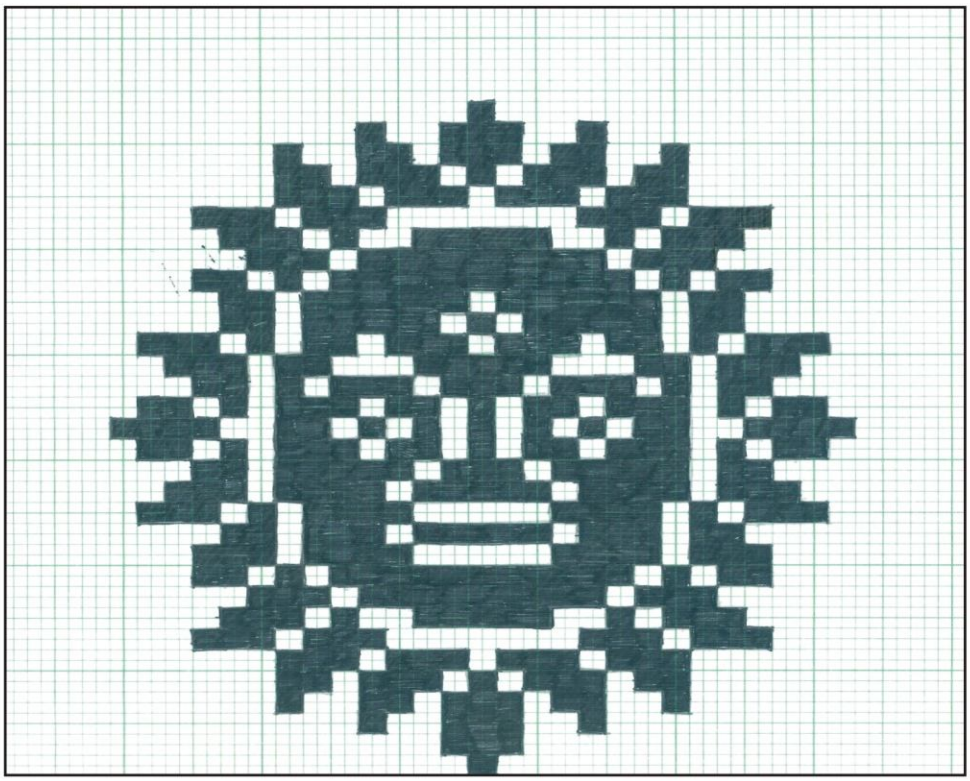


**Plate 7i. Design plan of ethnic Suryanarayana motif**

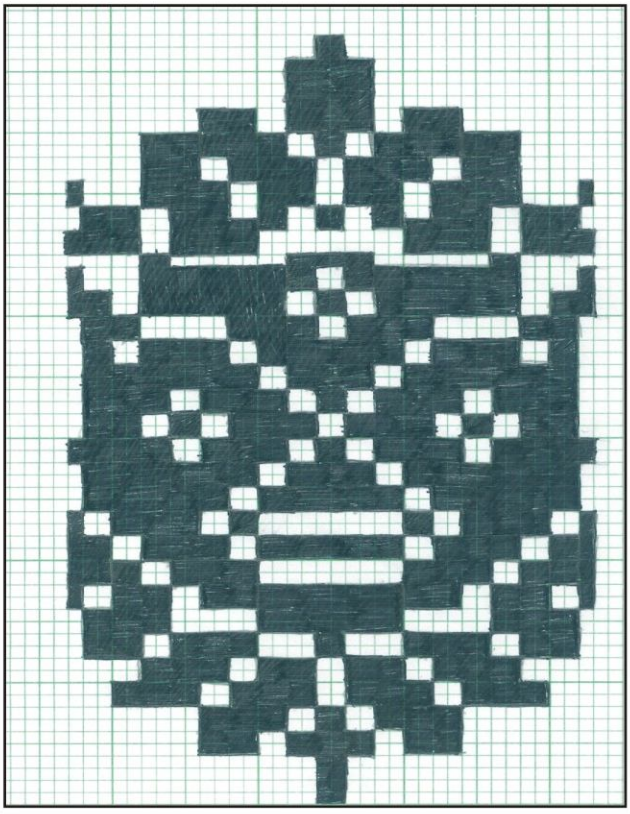


**Plate 7j. Design plan of ethnic Siddheswarmukuta motif**

### 4.6.1 Punching of jacquard cards and lacing

The punch cards used for weaving the motif with 172 jacquard must measure 19.50 centimeter in length and 16.20 centimeter in width. The number of holes in the punch cards depends upon the size of the design to be woven. Maximum rows of holes in each punch card are 8 and each row has maximum 20 holes. The cards are punched as per the design, the holes indicating warp-up. GC punch is the card punching software interfaced with computerized card punching machine (Plate 8) which assisted in punching of jacquards cards. The GC punch software displays the order of punching jacquard cards sequentially weft wise, which is then transferred to the computerized card punching machine. The punched cards are serially numbered and laced. Six hole are there on either side of the card are reserved for emergency punching. In other words each chains of card consist of 172 holes indicating that a design could repeat on a maximum of 172 picks. However, maximum number of holes in each row for main motifs and buttas are 14 whereas for border designs are 20. Each card is punched with 6 holes, 4 on each corner and one each in the centre on either side as shown in Fig. 8. Two large holes situated in the centre are called peg holes, that fit into the pegs of the lacing frame where as 4 small holes on four corners are used for lacing the punch cards serially.

**Lacing of punch cards**

The punch cards were laced manually. About 30 to 50 punch cards according to the design were placed flat, serially on an iron lacing frame, consisting of two long narrow metal supports studded with small metal or wooden pegs on either sides of the frame, that coincide with the peg holes of the punched cards fitting exactly on the lacing frame (Fig. 9). The lacing involve a unique technique where in the lace criss-crosses between two consecutive holes as well as between two consecutive cards that makes lacing very secure and prevent overlapping of adjacent cards. At the end, the first and the last cards were laced together to form a pattern chain (Plate 9).

In this study, totally 5 punch cards were prepared for the five kurti designs.

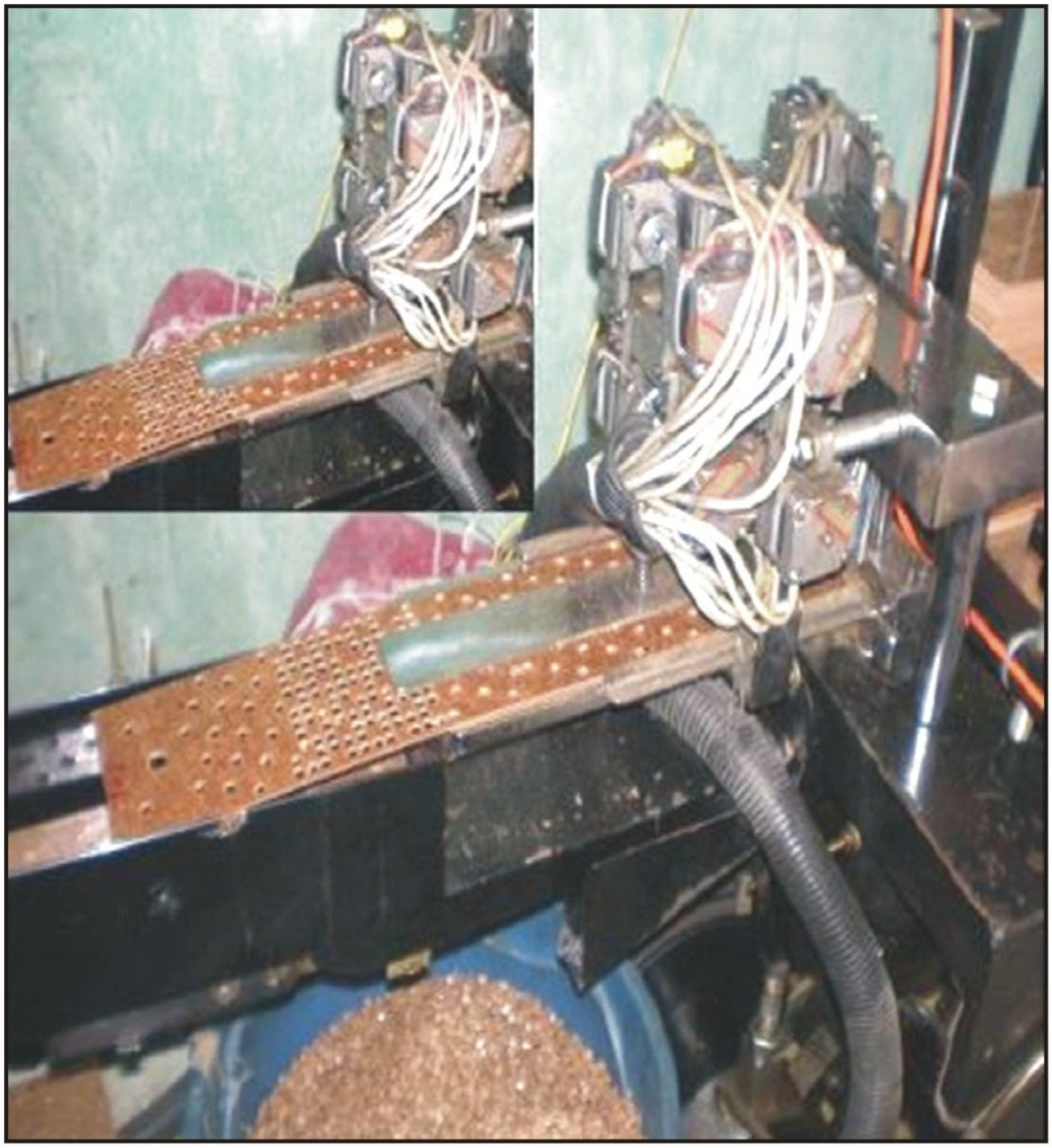


**Plate 8. Computerized card punching machine**

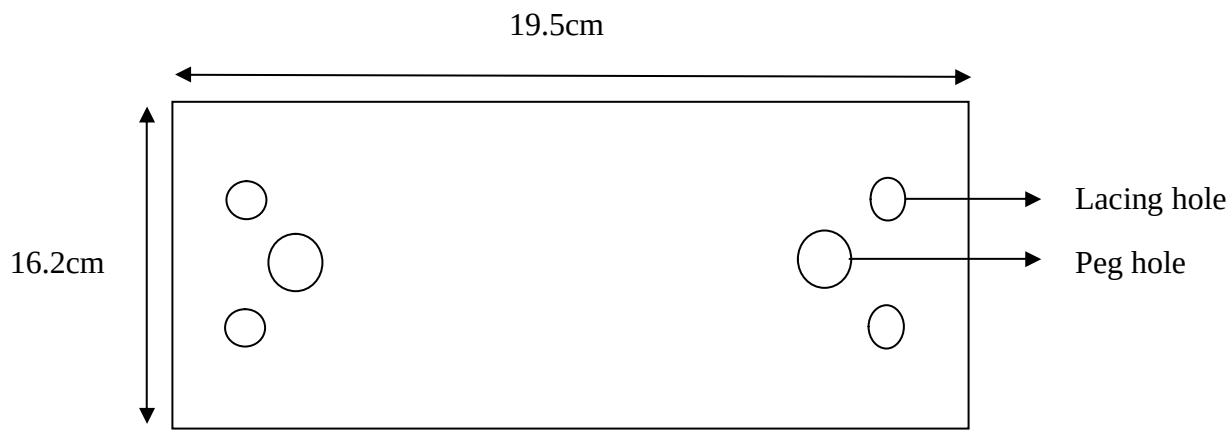



**Fig. 8. Punch card**

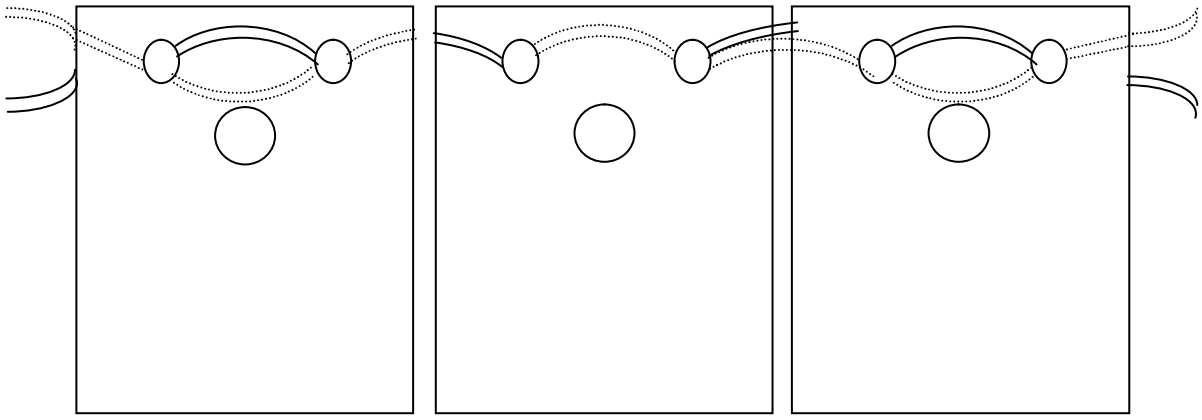


**Fig. 9. Lacing of punch card**

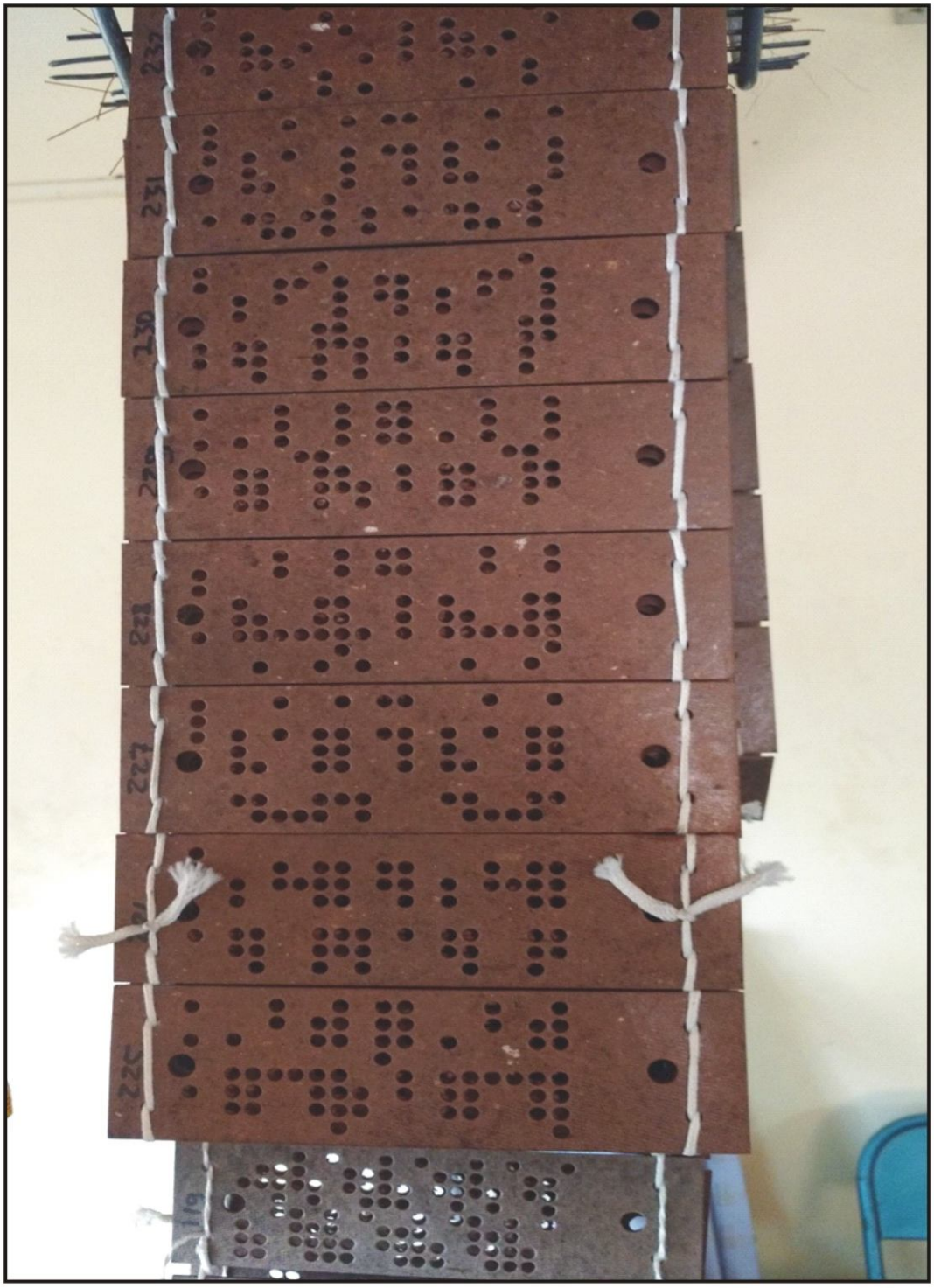


**Plate 9. Laced punch cards**

### 4.6.2 Raw material used

The details of raw material used for waving *Khana* kurtis is recorded in Table 18. The body of the jacquard woven *Khana* kurtis were composed of two ply mercerized cotton of 100s as warp while two ply mercerised cotton of 40s as weft. Meanwhile, the extra figuring was produced by using two folds of the polyester untwisted, multi-filament yarn of 110d. The yarns used in the weaving of these kurtis are purchased from Belgaum and Hubli.

### 4.6.3 Preloom process

#### a. Bobbin winding

The cotton warp yarns were wound on the electrically operated bobbin winder. Cotton yarn was wound on 12 plastic bobbins at a time. However, polyester yarn available in package form was wound with the aid of winding wheel manually onto the bobbins (Plate 10). Warping of 200 meters of yarn was done, which consumed about 15-20 kilogram of the cotton yarn. Small hanks of 250 yards called bali in a set of five were grouped together to form ‘ladi’. Many ‘ladis’ put together formed a motte each weighing 4.5 kilogram. Four to five mottes were required to wind around 250-300 bobbins with approximately each 200 meters yarn.

#### b. Warping

Sectional warping method was adopted to prepare the warp. Required numbers of bobbins (250-300) were arranged on the creel machine. From each bobbin, the yarn is drawn through a small reed and wound on to the warp beam (Plate 11). The reed is a guide to check the broken yarns. Approximately 200 meters of yarn is wound in each section and totally eight sections (six sections for body and two sections for border on either side) are wound to make the required width of the kurti.

#### c. Beaming

The process of transferring the previously prepared warp on the warp beam is known as beaming. The beam is provided with discs or flanges on both the sides to

**Table 18: Details of raw material used for weaving jacquard woven *Khana* kurtis**

| Sl. No. | Details of kurti | Yarn details | | |
|---|---|---|---|---|
| | | **Fibre content** | **Yarn type** | **Yarn count** |
| 1 | Body warp | Mercerized cotton | 2 ply | 100s |
| 2 | Body weft | Mercerized cotton | 2 ply | 40s |
| 3 | Extra weft | Polyester | Untwisted, multi-filament | 110d |

**Plate 10. Bobbin winding**

**Plate 11. Sectional warping**

maintain the width of the warp sheet, to protect and preserve the selvedge ends (Plate 12). While winding the warp on the beam care has to be taken to lay individual thread parallel to each other under uniform tension.

**d. Pirn winding**

With the help of electrically operated pirn winding machine the polyester yarn from the cone or packages is transferred to the pirn. Winding 6 pirns at a time is possible on this machine, which runs by 0.25 hp motor (Plate 13).

**e. Dividing of jacquard threads and attachment of murapatti**

The powerloom is attached with 172 hooks jacquard consisting of two lines, each hook consist of 10 harnesses and each line with 860 jacquard harnesses (*i.e.* two lines with 1720 jacquard harness). According to the design plan the jacquard threads were divided into 3 parts (Plate 14). In the first line all 860 yarns are gathered at the centre to obtain centre front and neck designs, while upper, border and butta designs were obtained by the second harness line (Plate 15). The murapatti is attached in the lower part of the powerloom which is used instead of the rope to reduce the pulling and increase the weaving process by saving energy and time (Plate 16).

**4.6.4 Loom process**

**a. Weaving with jacquard mechanism**

Powerloom with jacquard shedding mechanism of 172 needle capacity was employed to produce extra weft *Khana* designs to weave with reed count of 68/inch (Plate 17).

**Jacquard working principle**

A card cylinder on which pattern cards are passed, when the cylinder is comes in contact with needle board, horizontal needles pressed forward against a holes in the pattern card. The needles that go through the punched holes in the card, simultaneously selected hooks are goes up, which carries harness and warps to form the shed. Once the shed is created pick inserted and beatening takes place. Again and again the principle of shedding is carried until the entire pattern completes (Fig. 10).

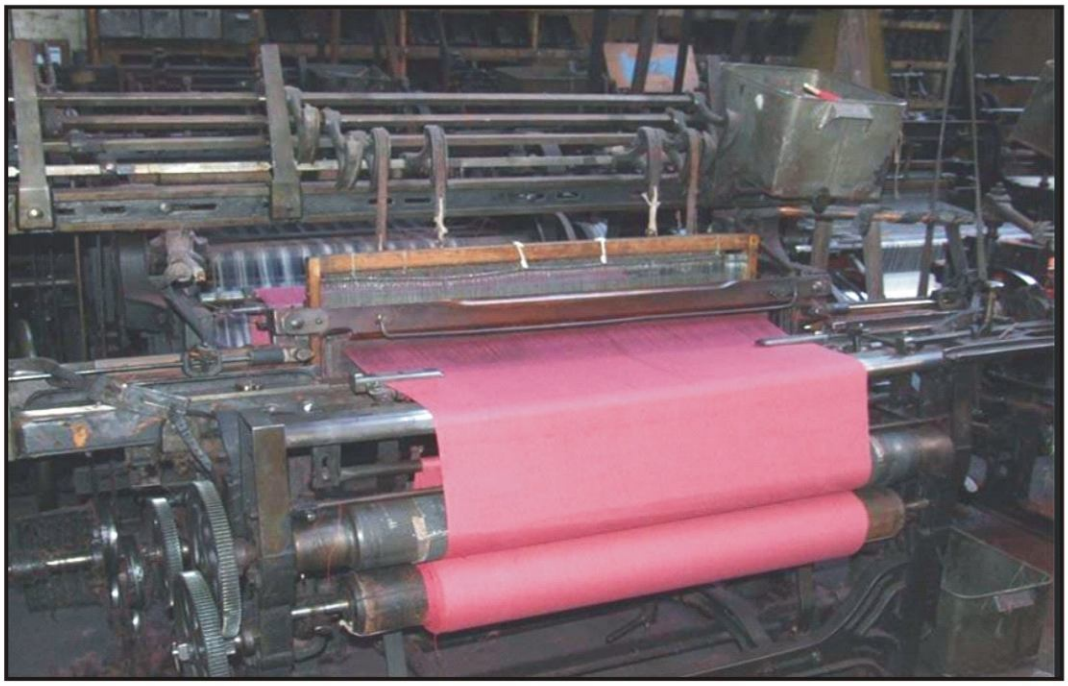


**Plate 12. Beaming**

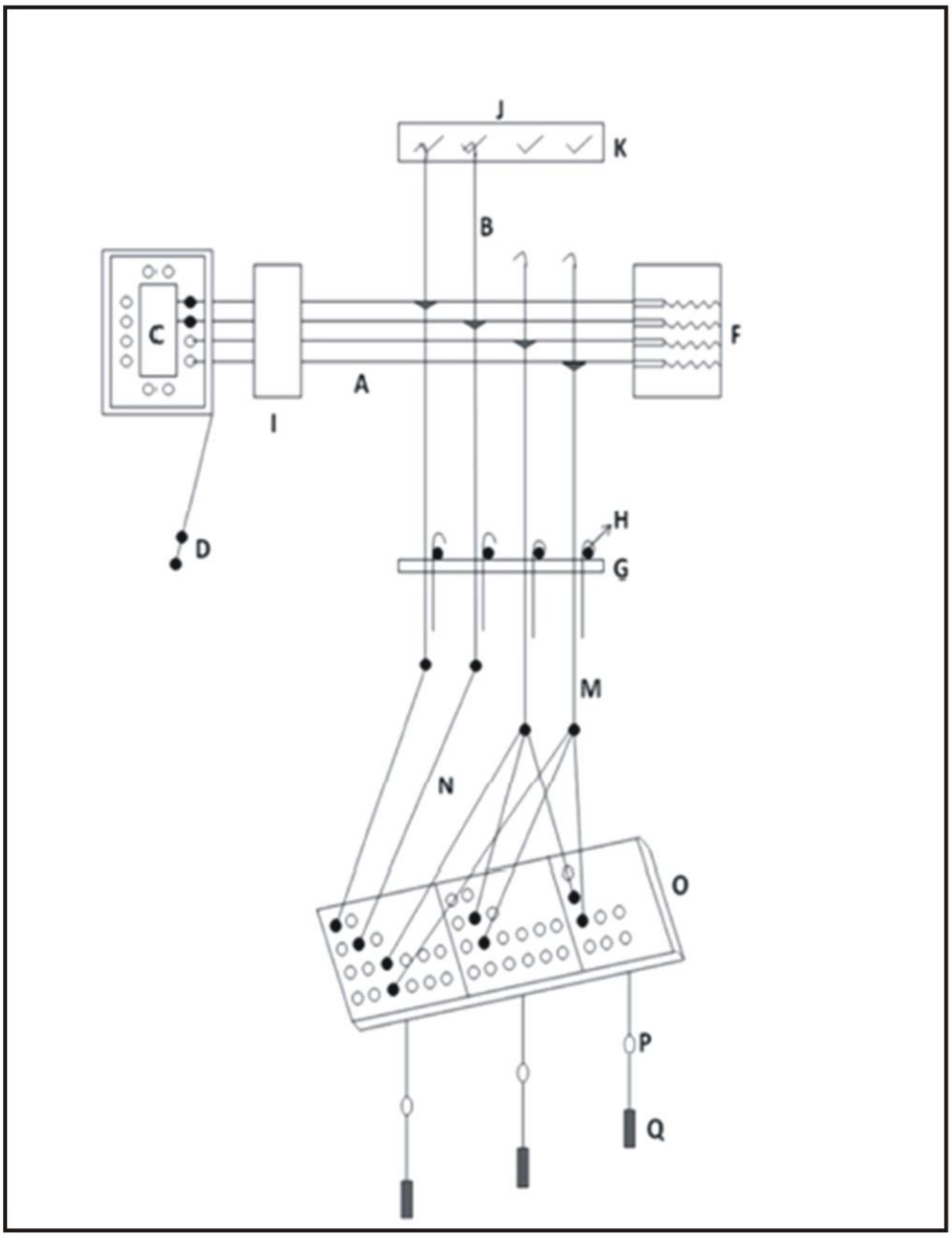
**Plate 13. Pirn winding**

**Plate 14. Dividing jacquard threads**

**Plate 15. Jacquard harness after division**

**Plate 16. Attaching murapatti**

**Plate 17. Weaving with jacquard mechanism**




A = Horizontal needles
B = Vertical hooks
C = Card cylinder
D = Pattern card
F = Spiral spring
G = Gate
H = Spindle
I = Needle board
J = Iron frame
K = Lifting knives
M = Neck cord
N = Harness cords
O = Comber board
P = Mail eye
Q = Weights

**Fig 10. Functional operation of jacquard shedding mechanism**

The digitized motifs were woven in kurtis by means of shuttles. These shuttles were inserted through a separate jacquard shed formed by attachment of murapatti to the loom which enables automatic pulling of jacquard chain. After the insertion of each shuttle, the shed is closed and the ground weft is beaten to the fell of the cloth. The same procedure is continued till the completion of the design.

**b. Cutting and doffing of kurti materials**

After completion of each kurti materials an extra length of approximately an inch was woven and separated from the cloth beam with the help of knife. This however, helped to prevent the slippage of yarns through the dents. The completed kurti material was then folded on the loom itself by laying several folds in a zigzag fashion. The weaver then starts weaving the next kurti material (Plate 18 and 19).

### 4.6.5 Post loom process

The woven kurti materials after removing from the beam were examined for defects (if any) visually, folded symmetrically and neatly packed.

## 4.7 Description of Jacquard woven *Khana* kurtis

Table 19 reveals about the fabric details of the jacquard woven *Khana* kurtis (Plate 20a to 20e). It is clear from this table that for all the kurtis same fabric sett, length x width, thickness and type of weave were maintained. The ends and picks are 80 x 66 in the body with 2.25 x 1.15 meter length and width, having 0.27 milimeter thickness and woven by employing plain weave with extra warp figuring. While the weight of the kurtis ranges from 0.237 to 0.253 grams.

## 4.8 Cost calculation of *Khana* dress materials

Table 20 reveals about the cost of production of the kurtis. Various factors like fixed cost (depreciation) and variable costs (repairs and maintenance, cost of yarns, punch cards and wages for weaving) were taken into account while determining the cost of production. It is clear from this table that the fixed costs remained same for all the five kurtis with variation in the variable cost. Similarly, the variation existed mainly with incurred punching the cards, raw materials used and wages. Further the net profit

**Plate 18.Cutting of *Khana* kurti material**

**Plate 19. Folding of *Khana* kurti material**

**Table 19: Fabric details of the jacquard woven *Khana* kurtis**

| Sl. No | Kurtis | Details of kurti | Threads/inch | | Type of weave used | Length of the kurti (in meter) | Width of the kurti (in meter) | Thickness of the kurti (in milimeter) | Weight of the kurti (gram) |
|---|---|---|---|---|---|---|---|---|---|
| | | | Ends | Picks | | | | | |
| 1 | $K_1$ | Kurti with border design (Suryanarayan and Tulsi pan) | 80 | 66 | Plain with extra weft figuring | 2.25 | 1.15 | 0.27 | 0.237 |
| 2 | $K_2$ | Kurti with butta and border design (Anne Hejji and Chitramala) | | | | | | | 0.242 |
| 3 | $K_3$ | Kurti with upper designs (Theru, Chitramala and suryanarayan) | | | | | | | 0.253 |
| 4 | $K_4$ | Kurti with centre front design (Chitramala and Tulsi pan) | | | | | | | 0.246 |
| 5 | $K_5$ | Kurti with neck and border design (Sidheswarmukuta and Theru) | | | | | | | 0.240 |

**Plate 20a. Kurti 1 with border design**
**<u>Motifs Used</u>:- Suryanarana and Tulsi pan with Double Hardy**

**Plate 20b. Kurti 2 with border and butta design**
**<u>Motifs Used</u>:- Anne Hejji and Chitramala**

**Plate 20c. Kurti 3 with upper design**
**<u>Motifs Used</u>:- Chitra Mala, Suryanayana and Theru**

**Plate 20d. Kurti 4 with centre front design**
**Motifs Used:- Chitramal and Tulsi pan**

**Plate 20e. Kurti 5 with border and neck design**
**<u>Motifs Used</u>:- Sidheswarmukuta and Theru**

**Table 20: Cost of production of jacquard woven *Khana* kurtis (Rupees/ kurti)**

| Sl. No | Particulars | Jacquard woven kurtis | | | | |
|---|---|---|---|---|---|---|
| | | **$K_1$** | **$K_2$** | **$K_3$** | **$K_4$** | **$K_5$** |
| I | Fixed cost | | | | | |
| 1 | Depreciation | 60 | 60 | 60 | 60 | 60 |
| | Total fixed cost (a) | 60 | 60 | 60 | 60 | 60 |
| II | Variable cost | | | | | |
| 1 | Repairs and maintenance | - | - | - | - | - |
| 2 | Cotton yarn | 68.75 | 68.75 | 68.75 | 68.75 | 68.75 |
| 3 | Polyester yarn | 08.76 | 26.28 | 43.8 | 35.04 | 17.52 |
| 4 | Punch card | 75 | 90 | 100 | 100.5 | 112.5 |
| 5 | Preparatory process | - | - | - | - | - |
| 6 | Wages | | | | | |
| i | Weaving | 50 | 125 | 150 | 175 | 125 |
| ii | Any other | - | - | - | - | - |
| | Total variable cost (b) | 202.51 | 310.03 | 362.55 | 379.29 | 263.77 |
| | Total production cost (a + b = c) | 262.51 | 370.03 | 422.55 | 439.29 | 323.77 |
| | Total profit at 30 % (d) | 78.75 | 111.1 | 126.76 | 131.78 | 97.13 |
| | Selling price (c + d =e) | 341.26 | 481.13 | 549.31 | 571.07 | 420.9 |
| | Total Selling price (e) | 340/- | 480/- | 550/- | 570/- | 420/- |

was calculated from total cost with an increased amount of 30 per cent. According to the design difference in the cost of production varies.

Looking into the total cost of the kurtis, the cost of weaving kurti- 4 is high (Rs. 570/-), followed by kurti- 3 with Rs. 550/-. Where the cost was comparatively less for kurti- 1 (Rs 340/-).

## 4.9 Consumer acceptance

A five point scale questionnaire was administered sixty respondents (30 students and 30 working women) rated these selected five jacquard woven *Khana* designed kurtis. The respondents rate the designs as Strongly Agree, Agree, Undecided, Disagree and Strongly Disagree as well as Excellent, Very Good, Good, Fair and Poor, considering the parameters *viz*., motif clarity, motif combination, background and motif colour combination, overall appearance, resemblance of motif and cost of the material (Plate 21).

### 4.9.1 Availability of apparel with *Khana* motifs

It is evident from Table 21 that, majority of the students possessed functional wear saree with *Khana* motif (46.67 %), followed by 33.33 per cent casual wear *Khana* motif chudidar kurta as well as salwar kameez. Whereas majority (76.67 %) of working women possessed functional wear sarees with *Khana* motif, followed by 73.33 per cent *Khana* blouse as casual wear and only 8.33 per cent of them had official wear salwar kameez with *Khana* motifs.

### 4.9.2 General opinion of the respondent about jacquard woven kurtis based on the elements and principles of design

Table 22 shows the opinion for the designed *Khana* kurtis on the basis of elements and principles of design. It is learnt from the table that, the highest mean score is obtained for the statement ‘whole pattern is balancing with body and border designs’ by the students for kurti-5 ($K_5$), followed by ‘proportion is maintained all over the design’ for kurti-4 ($K_4$) and least score is obtained for the statement ‘there is a rhythmic movement in the design’ for kurti-1 ($K_1$). Whereas in case of working women high score is obtained for the statement ‘Motifs are emphasized in the design’ for kurti-5

**Plate 21. Evaluation of jacquard woven *Khana* kurti materials**

**Table 21: Availability of apparel with *Khana* motifs**

**N=60**

| Sl. No. | Category | | Students (n = 30) | Working women (n = 30) | Total |
|---|---|---|---|---|---|
| 1 | Casual | Chudidar Kurta | 10 (33.33) | - | 10 (16.67) |
| | | Salwar Kameez | 06 (20.00) | 13 (10.00) | 19 (31.67) |
| | | Sarees | - | 18 (60.00) | 18 (30.00) |
| | | Blouse | - | 22 (73.33) | 22 (36.67) |
| 2 | Functional | Chudidar Kurta | 03 (10.00) | 05 (16.67) | 08 (13.33) |
| | | Salwar Kameez | 10 (33.33) | 15 (50.00) | 25 (41.67) |
| | | Sarees | 14 (46.67) | 23 (76.67) | 37 (61.67) |
| | | Blouse | 08 (26.67) | 10 (33.33) | 18 (30.00) |
| 3 | Office | Chudidar Kurta | - | - | - |
| | | Salwar Kameez | - | 05 (16.67) | 05 (08.33) |
| | | Sarees | - | 12 (40.00) | 12 (20.00) |
| | | Blouse | - | 14 (46.67) | 14 (23.33) |

Figures in parenthesis indicate percentages
Multiple responses possible

**Table 22: Opinion for the designed *Khana* kurtis on the basis of elements and principles of design**

**N=60**

| Sl. No | Opinion based on elements and principles of design | Weighted mean scores (WMS) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Students (n=30) | | | | | Working women (n=30) | | | | |
| | | $K_I$ | $K_2$ | $K_3$ | $K_4$ | $K_5$ | $K_I$ | $K_2$ | $K_3$ | $K_4$ | $K_5$ |
| 1 | Size and shape of the motif is proportionate | 3.26 | 3.39 | 4.17 | 4.33 | 4.13 | 3.33 | 4.52 | 4.32 | 4.23 | 4.56 |
| 2 | Placement of the motif is proper | 3.41 | 3.48 | 4.34 | 4.57 | 4.40 | 3.45 | 4.47 | 4.16 | 4.16 | 4.78 |
| 3 | Colour used for the design is appropriate | 2.93 | 3.89 | 4.25 | 4.17 | 4.57 | 3.37 | 4.67 | 4.23 | 4.33 | 4.48 |
| 4 | The colour used for motif suits the background colour | 3.67 | 3.67 | 4.89 | 4.37 | 4.30 | 3.47 | 4.34 | 4.33 | 4.58 | 4.89 |
| 6 | Motifs are emphasized in the design | 3.33 | 3.37 | 4.35 | 4.45 | 4.56 | 4.27 | 4.78 | 4.76 | 4.79 | 4.92 |
| 7 | Unity is maintained all over the design | 3.92 | 4.24 | 4.50 | 4.37 | 4.33 | 3.98 | 4.56 | 4.12 | 4.47 | 4.74 |
| 8 | The design is visually satisfying | 3.89 | 4.67 | 4.32 | 4.56 | 4.58 | 3.89 | 4.89 | 4.56 | 4.77 | 4.36 |
| 9 | Surface quality of the material is soft in texture | 3.45 | 3.49 | 3.53 | 3.42 | 3.63 | 3.03 | 3.56 | 3.17 | 3.26 | 3.33 |
| 10 | There is a rhythmic movement in the design | 2.90 | 4.25 | 4.36 | 4.48 | 4.44 | 3.13 | 4.33 | 4.58 | 4.64 | 4.83 |
| 11 | Proportion is maintained all over the design | 3.24 | 4.23 | 4.00 | 4.80 | 4.50 | 3.17 | 4.79 | 4.72 | 4.44 | 4.58 |
| 12 | Whole pattern is balancing with body and border designs | 3.17 | 4.37 | 4.02 | 4.67 | 4.89 | 4.15 | 4.78 | 4.68 | 4.03 | 4.77 |

**Note:-SA- Strongly Agree (5), A- Agree (4), UD- Undecided (3), D- Disagree (4) and SD- Strongly Disagree**

Multiple responses possible

($K_5$), followed by 'the colour used for motif suits the background colour' for kurti-5 ($K_5$) and 'the design is visually satisfying' for kurti-2 ($K_2$), whereas less score is scored by surface quality of the material is soft in texture by kurti-1 ($K_1$).

### 4.9.3 Preference for the developed *Khana* designed kurtis

The collected data was analyzed with frequencies and then the Weighted Mean Score (WMS) was calculated by scoring Excellent as 5, Very Good – 4, Good – 3, Fair - 2 and Poor - 1 *i.e.*, better the ranking, higher is the score. Further, to assess the percentage acceptability of jacquard woven *Khana* kurti materials, an Acceptability Index (A.I) was calculated (Upadhayay and Babel, 2013).

It is noticed from Table 23 and Fig. 11 that, the mean scores obtained by the students for motif clarity is highest for kurti-4 ($K_4$) (4.83), followed by kurti-5 ($K_5$) (4.70). Similarly in motif combination highest mean scores was obtained by kurti-4 ($K_4$) (4.93), followed by kurti-5 ($K_5$) (4.43). In case of motif and background colour combination kurti-4 ($K_4$) (4.80) got high mean score, followed by kurti-5 ($K_5$) (4.63). Kurti-4 ($K_4$) again has scored high mean score (4.90) for overall appearance, followed by kurti-5 ($K_5$) (4.83). However, working women gave highest mean scores to kurti-5 ($K_5$) (4.87) for motif clarity, kurti-5 ($K_5$) (4.60) for motif combination and kurti-5 ($K_5$) (4.80) for motif and background colour combination and kurti-2 ($K_2$) (4.93) for overall appearance, followed by kurti-4 ($K_4$) (4.83), kurti-2 ($K_2$) and kurti-4 ($K_4$) (4.53), kurti-2 ($K_2$) (4.73) and kurti-2 ($K_2$) (4.93) for motif clarity, motif combination, motif and background colour combination and overall appearance respectively. However, the chi square values obtained for kurti-2 ($K_2$) and kurti-4 ($K_4$) were significant at 5 per cent level of significance, whereas kurti-5 ($K_5$) was highly significant and kurti-1 ($K_1$) and kurti-2 ($K_2$) were found to be non-significant.

Table 24 shows the acceptance of the jacquard woven *Khana* kurtis. In case of students the acceptance index obtained for kurti-4 ($K_4$) is high (97.33 %), followed by kurti-5 ($K_5$) (93 %). Meanwhile least acceptance is gained by kurti-1 ($K_1$) (73.00 %). Irrespective of the students the acceptance index obtained by the working women is highest for kurti-5 ($K_5$) (95.83 %), followed by kurti-4 ($K_4$) (93.67 %) while, kurti-1 ($K_1$) (92.67 %) got least acceptance index.

**Table 23: Preference for the jacquard woven *Khana* kurtis**

**N=60**

| Sl. No. | Kurti No | Details of kurti | WMS | | | | | | | | $X^2$ value |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Students (n=30) | | | | Working women (n=30) | | | | |
| | | | Motif clarity | Motif combination | Motif and background colour combination | Overall Appearance | Motif clarity | Motif combination | Motif and background colour combination | Overall Appearance | |
| 1 | $K_1$ | Kurti with border design (Suryanarayan and Tulsi pan) | 3.53 | 3.60 | 3.20 | 4.27 | 3.37 | 3.70 | 3.76 | 4.60 | $02.56^{NS}$ |
| 2 | $K_2$ | Kurti with butta and border design (Anne Hejji and Chitramala) | 4.00 | 4.07 | 4.07 | 4.53 | 4.33 | 4.53 | 4.73 | 4.93 | 09.01* |
| 3 | $K_3$ | Kurti with upper designs (Theru, Chitramala and suryanarayan) | 3.93 | 3.73 | 4.47 | 4.50 | 4.60 | 4.13 | 4.27 | 4.80 | $07.60^{NS}$ |
| 4 | $K_4$ | Kurti with centre front design (Chitramala and Tulsi pan) | 4.83 | 4.93 | 4.80 | 4.90 | 4.83 | 4.53 | 4.53 | 4.86 | 09.28* |
| 5 | $K_5$ | Kurti with neck and border design (Sidheswarmukuta and Theru) | 4.70 | 4.43 | 4.63 | 4.83 | 4.87 | 4.60 | 4.80 | 4.90 | 16.13** |

**Note:** 5- Excellent, 4- Very good, 3- Good, 2- Fair and 1- Poor
Multiple responses possible
* Significant at 5 per cent level
**Significant at 1 per cent level

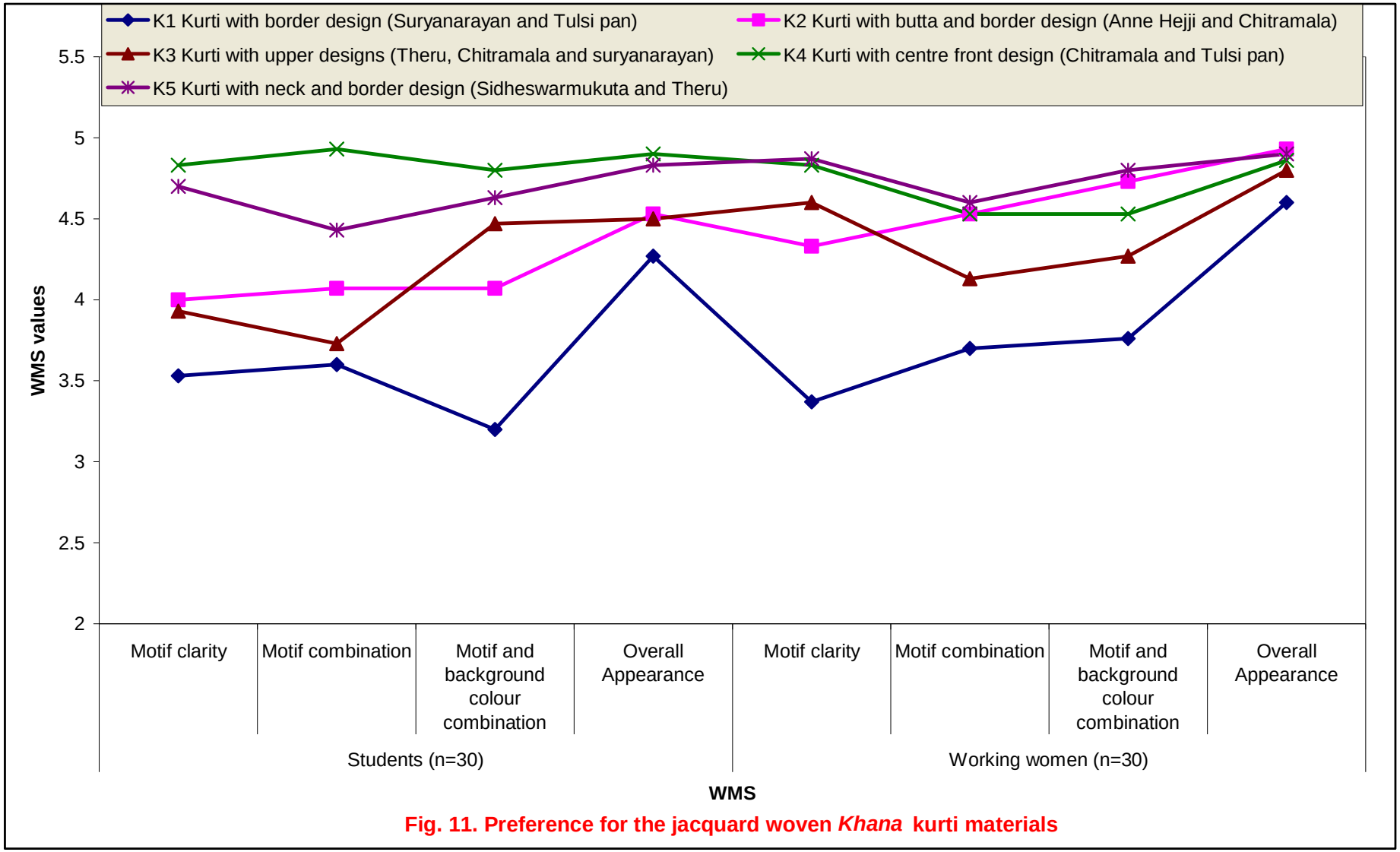



**Fig. 11. Preference for the jacquard woven *Khana* kurti materials**

**Table 24: Acceptance of the jacquard woven *Khana* kurtis**

**N=60**

| Sl. No | Parameters | Mean score | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Students (n=30) | | | | | Working women (n=30) | | | | |
| | | $K_1$ | $K_2$ | $K_3$ | $K_4$ | $K_5$ | $K_1$ | $K_2$ | $K_3$ | $K_4$ | $K_5$ |
| 1 | Motif clarity | 106 | 120 | 118 | 145 | 141 | 101 | 130 | 138 | 145 | 146 |
| 2 | Motif combination | 108 | 122 | 101 | 148 | 133 | 111 | 136 | 124 | 136 | 138 |
| 3 | Colour combination | 96 | 122 | 143 | 144 | 139 | 113 | 141 | 128 | 135 | 144 |
| 4 | Overall appearance | 128 | 136 | 135 | 147 | 145 | 138 | 149 | 144 | 146 | 147 |
| Total scores obtained by the border designs | | 438 | 500 | 497 | 584 | 558 | 463 | 556 | 534 | 562 | 575 |
| **Acceptance index** | | 73.00 | 83.33 | 82.83 | 97.33 | 93.00 | 77.17 | 92.67 | 89.00 | 93.67 | 95.83 |

**Table 25: Resemblance of the designed jacquard *Khana* kurtis with dobby *Khana* material**

**N=60**

| Sl. No. | Kurti No | Type of kurti | Types of motifs used | Resemblance of motif | | | | | WMS | Resemblance of motif | | | | | WMS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Students (n=30) | | | | | | Working women (n=30) | | | | | |
| | | | | SA | A | UD | D | SD | | SA | A | UD | D | SD | |
| 1 | $K_1$ | Kurti with border design | Suryanarayan and Tulsi pan | 14 (46.67) | 16 (53.33) | - | - | - | 4.47 | 20 (66.67) | 10 (33.33) | - | - | - | 4.67 |
| 2 | $K_2$ | Kurti with butta and border | Anne Hejji and Chitramala | 20 (66.67) | 09 (30.00) | 01 (03.33) | - | - | 4.63 | 27 (90.00) | 03 (10.00) | - | - | - | 4.90 |
| 3 | $K_3$ | Kurti with upper designs | Theru, Chitramala and suryanarayan | 23 (76.67) | 07 (23.33) | - | - | - | 4.76 | 23 (76.67) | 07 (23.33) | - | - | - | 4.23 |
| 4 | $K_4$ | Kurti with centre front | Chitramala and Tulsi pan | 28 (93.33) | 02 (06.67) | - | - | - | 4.93 | 26 (86.67) | 04 (13.33) | - | - | - | 4.87 |
| 5 | $K_5$ | Kurti with neck and border | Sidheswarmukuta and Theru | 27 (90.00) | 03 (10.00) | - | - | - | 4.90 | 25 (83.33) | 05 (16.67) | - | - | - | 4.83 |

**Note:** SA- Strongly Agree (5), A- Agree (4), UD- Undecided (3), D- Disagree (4) and SD- Strongly Disagree (5)
Figures in parenthesis indicate percentages
Multiple responses possible

**Table 26: Acceptability level of cost for the jacquard woven kurtis**

**N=60**

| Sl. No | Kurti Design | Cost of the kurti (in Rs) | Acceptability | | | | | WMS | Acceptability | | | | | WMS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Students (n=30) | | | | | | Working women (n=30) | | | | | |
| | | | Very costly | Costly | Moderate | Fair | Cheap | | Very costly | Costly | Moderate | Fair | Cheap | |
| 1 | Kurti 1 | 340/- | - | - | - | 01 (3.33) | 29 (96.67) | 1.03 | - | - | - | 03 (10.00) | 27 (90.00) | 1.10 |
| 2 | Kurti 2 | 480/- | - | - | 03 (10.00) | 07 (23.33) | 20 (66.67) | 1.43 | - | - | 03 (10.00) | 12 (40.00) | 15 (50.00) | 1.60 |
| 3 | Kurti 3 | 550/- | - | - | 04 (13.33) | 08 (26.67) | 18 (60.00) | 1.53 | - | - | 06 (20.00) | 12 (40.00) | 12 (40.00) | 1.80 |
| 4 | Kurti 4 | 570/- | - | - | - | 18 (60.00) | 12 (40.00) | 1.60 | - | - | 03 (10.00) | 14 (46.67) | 13 (43.33) | 1.67 |
| 5 | Kurti 5 | 420/- | - | - | 01 (03.33) | 13 (43.33) | 14 (46.67) | 1.43 | - | - | - | 18 (60.00) | 12 (40.00) | 1.60 |

Figures in parenthesis indicate percentages
Multiple responses possible

### 4.9.5 Resemblance of jacquard woven *Khana* motifs with dobby woven *Khana* motifs

It is obvious from Table 25 that, most of the students (93.33 %) strongly agreed that motifs of the jacquard woven *Khana* kurti-4 ($K_4$) resembled with dobby woven *Khana* motifs, followed by 90 per cent strongly agreed that kurti-5 ($K_5$) resembled with dobby woven *Khana* material. Whereas most of the working women (90 %) strongly agreed that kurti-2 ($K_2$) resembled with dobby woven *Khana* materials, followed by 86.67 per cent with kurti-4 ($K_4$). However, the mean scores obtained for kurti-4 ($K_4$) (4.93) high in case of students whereas, in case of working women kurti-5 ($K_5$) got high scores (4.90).

### 4.9.6 Acceptability level for cost of the developed kurtis

Table 26 represents the acceptability level for the cost of the jacquard woven kurtis. Most of the students (96.67 %) as well as working women (90.00 %) stated that kurti-1 ($K_1$) is cheap, followed by kurti-2 (66.67%). Whereas in case of working women 60 per cent of them said the cost of kurti-5 ($K_5$) is moderate at cost. However, the mean scores obtained for all kurtis are less than 2 which indicate that all the kurtis are at reasonable price.

# 5. DISCUSSION

The findings of the present study are discussed in detail under the following sub heading.

5.1 Designs produced and products manufactured

5.2 Demographic characteristics of *Khana* weavers

5.3 Procurement of raw material and motifs

5.4 Problems faced by the *Khana* weavers

5.4.1 Problems faced during procurement of raw material

5.4.2 Problems faced during marketing of *Khana* materials

5.4.3 Problems faced before and after loom process

5.4.4 Health problems

5.5 Weaving of *Khana* dress materials

5.5.1 Selection of designs

5.5.2 Digitizing the ethnic *Khana* motif

5.5.3 Punching of jacquard cards and lacing it

5.5.4 Raw material details

5.5.5 Loom and weaving technology employed to weave digitized *Khana* kurtis

5.6 Fabric information of woven *Khana* kurtis

5.7 Cost calculation of newly developed kurtis

5.8 Consumer acceptance for jacquard woven *Khana* kurtis

5.8.1 Availability of apparel with *Khana* motifs

5.8.2 General opinion of the respondent about jacquard woven kurtis based on the elements and principles of design

5.8.3 Preference for the developed *Khana* designed kurtis

5.8.4 Resemblance of jacquard woven *Khana* motifs with dobby woven *Khana* motifs

5.8.5 Acceptability level for cost of the developed kurtis

## 5.1 Designs produced and products manufactured

The production of variegated design on *Khana* material (Table 2) revealed that majority of weavers produce traditional designs *viz.*, Theru, Suryamukuta and so on which were found on the sarees, blouse material and dress material. Whereas, few of them produced stylised designs. They usually preferred traditional designs because Guledgudda is the origin of *Khana* materials and hence nowadays most of them prefer traditional designs for production. Some of them produced designs by combining traditional and stylised motifs for providing some changes to the fashion world (Table 3).

It is apparent from Table 4 that, majority of the weavers (73.33 %) used cotton polyester blend fibres for weaving blouse materials, may be because it is cheaper, easily available and comfortable. About 43.33 per cent of weavers produced cotton dress materials because of its absorbency and comfort properties. Polyester yarns are used because of low cost. However, rayon yarns are also used because it is the replicate of natural silk which exhibits shinning property. These yarns were also used by the weavers for manufacturing blouse, saree and dress materials.

Guledgudda *Khana* designs are the intricate, ethnic designs basically produced on blouse materials which women wear it with a combination to *Ilkal* sarees, but due to fashion trend different kinds of products are manufactured day by day (Table 5), *viz.*, sarees and dress materials.

## 5.2 Demographic characteristics of *Khana* weavers

The demographic characteristics of Guledgudda *Khana* weavers include age, gender, education, type of family, size of family, annual income, type of weavers and total working hours per day are discussed under the following sub headings.

From the Table 6(a) it is inferred that majority of the weavers at Guledgudda belonged to middle age group (63.33 %), range between 30-55 years may be because cent per cent of young weavers are interested to take up jobs rather than weaving and majority of the weavers preferred to continue their ancestral occupation. However, these findings are similar to the findings of Karunanidhi (1986).

It is remarked from Table 6(b) that, majority of *Khana* weavers were male (83.33 %) weavers as in Guledgudda, though most of the females were housewives, few of them help in pirn winding, splicing, cutting and doffing.

Majority of *Khana* weavers in Guledgudda were educated upto secondary level (40.00 %), followed by primary level and higher secondary. Whereas, 6.67 per cent were illiterate. This may be due to the financial crises, non-availability of local educational facilities and lack of encouragement from the elders to go for higher education (Table 6c). However, these results are on par with the findings of Vastrad (2003).

It was cheerful to notice that about 3.33 per cent of degree holders worked as weavers which may be due to financial crisis, non-availability of employment opportunities, lack of funds to invest on heavy machinery and imposement by the elders to continue ancestral occupation.

It is evident from the Table 6d to 6f that, majority of the weavers fell in the category of joint family system (70 %), medium family size (63.33%) and low income group (53.33%), may be because majority of the weavers continued their ancestral occupation of weaving, living together with their brothers and other family members with atleast 5-9 members. Since they continued their ancestral occupation, weaving was the only source of income and hence, belonged to low income group. Other reasons like problems of shelter for living separately, family burden and lack of awareness about the

consequences that arise in joint family system and dearth of subsidiary occupation like agriculture, weaving in KHDC (Karnataka Handloom and Development Corporation) and other petty business contribute to the above. The present findings are in conformity with the findings of Mamatha and Naik (1997) and Vastrad (2003).

Majority of the *Khana* weavers were independent weavers (76.67 %) having less than six looms at their working place and also working independently but their means of marketing and source of procurement of raw materials were master weavers this may be because most of the weavers continued their ancestral occupation of weaving. However, 16.67 per cent of them were master weavers having more than six looms and working independently, while their means of marketing and source of purchasing are wholesalers and co-operative societies. A few of them (6.67%) were wage workers who were working for master weavers may be because few of the weavers were illiterate and might be did not got any government job so they worked on wage basis (Table 7).

It is noticed from Table 8 that, majority of weavers worked upto 8 hours per day (50.00 %), followed by 33.33 per cent worked for 6 hours/ day along the year. This may be because weaving is the only means of earning and however they do not have knowledge about agriculture, tailoring and hence, most of the time they spent on weaving *Khana* materials.

## 5.3 Procurement of raw material and motifs

It is apparent from Table 9 that, majority of the weavers purchased and marketed their raw materials from master weavers (60.00 %) in exchange of finished goods (Table 11), because most of weavers were independent weavers whose means of marketing and purchasing of finished goods and raw materials respectively is from master weavers. While 23.33 per cent of weaver procured raw material from KHDC (Karnataka Handloom and Development Corporation) on partial payment basis. Cent per cent of weavers purchased raw materials from local dealers in exchange of cash, probably these weavers fell under master weaver category who were independent so that they can easily procure raw materials from local market and dealers.

Coming to the source of procurement of motif for *Khana* materials (Table 10), multiple responses were obtained. The ethnic and traditional *Khana* motifs were provided by the master weavers because most of the selected weavers were independent weavers. The weavers also referred their old samples and KHDC (Karnataka Handloom and Development Corporation) for producing *Khana* designs on choli/ blouse material and sarees. Cent per cent of the weavers did not procure the motif and design neither from books nor magazines, nor they created designs, or asked customers what kind of designs they preferred because majority of weavers belonged to low education level with lower exposure to the outer world which affected their fashion changing trend. And also they didn't even plan to modify the existed designs.

## 5.4 Problems faced by the *Khana* weavers

The problems faced by the Guledgudda *Khana* weavers were classified into different categories and discussed below.

### 5.4.1 Problems faced during procurement of raw material

It is apparent from Table 12 that, majority of weavers faced the problems of hike in price while procuring raw material (60.00 %), followed by non availability of required yarn counts (50.00 %). The mean scores obtained for hike in price is higher followed by non availability of required yarn counts and non-availability in adequate quantities. This may be because most of the weavers did not have any kind of training so they continued their ancestor's occupation of weaving which affected their selection behaviour and also majority of them were independent weavers who procured the raw material from master weavers at high price. Since most of the weavers purchased raw materials from master weavers, the rates inferred and yarns given by them might were final and blindly accepted by the weavers.

### 5.4.2 Problems faced during marketing of *Khana* materials

It is noticed from Table 13 that, the weighted mean scores for repair and maintenance of powerloom is higher because of irregular supply of electricity, lack of training among the weavers which affected the maintenance of looms by the weaver. Second highest score is obtained by lack of publicity, because they had no idea of

advertising and publicising the new designs woven by them. Due to lack of knowledge in marketing the weavers face the problem of hike in transportation charges.

### 5.4.3 Problems faced before and after loom process

A glance at Table 14 revealed that, chi-square value obtained for problems faced before and after loom process is highly significant. The chi-square values obtained for problems which were faced before loom process by the weaver like untimely supply of raw materials from master weavers, non-availability in adequate quantities, hike in price for raw materials *etc.* is higher in comparison to problems which were faced after loom process like lack of demand, non- profitable labour, hike in transportation charges and so on. The problems that arised before loom process were not in the control of weavers hence, the chi-square values were high. However, problems faced after loom process could be controlled by the weavers by them self which may be like producing new kind of designs according to the fashion trend and customers need. Taking a qualitative training regarding operating and handling looms, working under KHDC (Karnataka Handloom and Development Corporation) and so on can reduce these kinds of problems faced by the weavers after weaving.

### 5.4.4 Health problems

Besides the problems which were faced while weaving, weavers also faced health problems like eye sight weakness, joint pain, dust allergy and back pain. From Table 15 it is noticed that, majority of weavers suffered from back pain (76.67 %) due to regular bending and to and fro moving during weaving. While 70 per cent of weavers suffered from eyesight weakness because of watching the continuous picking and beating process constantly to avoid miss-thread during weaving, and also their eyes might be susceptible to the entry of subdued yarn particles from compacted air that might have caused eyesight weakness. However, 40 per cent of them faced dust allergy problem and 26.67 per cent joint pain. Dust allergy may be because of the release of particulate materials from yarns during weaving process, whereas joint pain may be because of bending and moving from one side to other side of the loom to look after the weaving process.

Other than the factors discussed above, many other factors like age and working hours also affected the health condition of *Khana* weavers. To check the association between weaver's health condition with age and working hours, chi- square test of significance is used. The chi-square values for age with eyesight weakness and joint pain are significant whereas, for back pain it is highly significant, meanwhile it was non-significant for dust allergy. Age only contributed in back and joint pain due to decalcification of bone calcium and have no relation with dust allergy. However, eyesight weakness and dust allergy are significantly related to working hours because of exposure to the weaving process which releases tiny particles of fibres that cause dust allergy while long time watching to the picking process caused eyesight weakness. Whereas chi- square values for joint pain and back pain are highly significant due to their working postures like bending, stretching, and moving front to back and so on (Table 16).

## 5.5 Weaving of *Khana* dress materials

### 5.5.1 Selection of designs

Based upon elements and principles of design, total 20 kurti designs were developed from ten ethnic *Khana* motifs with respect to suitability of designs, suitability of motif for weaving with jacquard mechanism. Results presented in Table 17 revealed the weighted mean score obtained for twenty developed designs. Kurti design no. 17 with border and neck design (Sidheswarmukuta and Theru motif) got highest mean values (4.47), followed by kurti design no. 8 (4.28) with border and butta design (Anne Hejji and Chitramala motif) may be because of the combination and placement of motif, change in pattern styles, combination of motif and background colour and appearance of the design.

### 5.5.2 Digitizing the ethnic *Khana* motif

The process of digitizing the ethnic *Khana* motifs of Guledgudda using Computer Aided Textile Designing software – Adobe photoshop and GC Kala was quick, faster and user-friendly compared to manual designing that is laborious, time consuming and less flexible to change, modify and/or replicate the design. It was

possible to digitize different dimensions of designs on this software retaining the traditionality (Fig. 7). Similar results were observed by Byadgi (2009) in her study on "Digitizing conventional patterns of Gujarat embroidery and product development" that digitizing the conventional Gujarat motifs on computer was more advantageous than manual designing since it saved time, money and labour. These results were also in line with the study conducted by Arun (2000) on "Implementation of CAD/CAM in textile industry" who concluded that through CAD application, designs could be created, modified and saved in respective archives to use as and when in demand resulting into low cost of production.

### 5.5.3 Punching of jacquard cards and lacing

The punch card system adopted for weaving of *Khana* dress materials was the key process that endowed the loom with flexibility and also cut back the amount of human labour. It was possible to create intricate patterns by having many cards arranged sequentially in the form of a pattern chain and also allowed the patterns to be stored on these cards which can be utilized over and over again to create the same design in various styles as per the consumer demand (Fig.8 and 9).

### 5.5.4 Raw material details

Raw material plays a vital role in the production of any good/product that influences its production rate. It is learnt from Table 18 that the raw materials used for weaving extra warp *Khana* dress materials was mercerized cotton for both warp (2/100s) and weft (2/40s), untwisted polyester multi-filament yarn as extra weft (110d). However, a slight variation was observed in the yarn count. Two folds of the polyester multi-filament yarn was used for extra weft figuring resulting into increase in the thread density to produce bold and compact designs across the width of the dress materials.

### 5.5.5 Loom and weaving technology employed to weave digitized *Khana* kurtis

Guledgudda *Khana*s are the materials which were woven by using an extra warp beam attached to the loom with dobby mechanism. The sizes of the motifs were small but for weaving in a specified required area, extra weft technique is implimented. Hence, powerloom with jacquard shedding mechanism was employed for weaving

*Khana* kurtis (Fig.10), thus increasing the rate of production. Further, it is imperative to state that the extra weft figuring was produced by inserting the picks through separate jacquard shed. Therefore, the *Khana* motifs can also be woven not only with dobby attachment but also with jacquard mechanism. Hence, the hypothesis stating that 'the extra warp dobby *Khana* designs cannot be produced by extra weft jacquard mechanism' is rejected.

## 5.6 Fabric information of woven *Khana* kurtis

Fabric sett denotes the spacing of ends and picks in the fabric expressed as the number of threads per inch. The extra weft *Khana* kurtis were woven with fabric sett of 80 x 66 ends and picks/inch in the body resulting into better fabric density thus making the kurtis more durable and comfortable to wear. The total length of the kurtis is about 2.25 meters because it is imperative to have larger length of fabric for kurtis since it covers the lower part of the body and varies in length according to the height of the person and trend. The width of all the five kurtis remained same i.e. 1.15 meters. The weight of the kurtis varied from 0.237 to 0.253 grams because the quantity of polyester yarns for extra weft figuring varied according to the design but the warp and weft yarns used for all designs remained same (Table 19).

## 5.7 Cost calculation of newly developed kurtis

It is evident from Table 20 that, the cost of all kurtis ranged between Rs. 300/- to 600/- including all fixed as well variable costs are quite higher. It required one day for weaving one kurti. Total five days are required to weave all five kurtis. The total cost of jacquard woven *Khana* kurties was relatively less because of employing powerloom with jacquard shedding mechanism and murapatti attachment adopted for producing these patterns not only assisted in creating new designs but also increased the speed thus saving time, money and energy. Since the same punch cards can be used for producing other designed textiles which further reduces the cost.

## 5.8 Consumer acceptance for jacquard woven *Khana* kurtis

### 5.8.1 Availability of apparel with *Khana* motifs

It is imperative from Table 21 that, majority of students possessed *Khana* motif functional sarees (46.67 %), functional wear salwar kameez as well as chudidar kurta as casual wear (33.33%). Irrespective of the students, 76.67 per cent of working women possessed functional wear *Khana* motif saree followed by 73.33 per cent casual wear blouse. Comparatively working women had a great collection of *Khana* material than students because *Khana* is traditional wear, worn especially in combination with *Ilkal* saree. Most of the working women's of Karnataka possess one or two *Khana* blouse material in their wardrobe.

### 5.8.2 General opinion of the respondent about jacquard woven kurtis based on the elements and principles of design

The woven kurtis were designed on the basis of elements and principles of design. The mean score obtained for all kurtis by the students as well as by the working women lies between 3 to 5 which indicates that most of the respondents agreed with the statements based on elements and principles of design. Thus inferring that application of elements and principles of design in developing kurti designs plays an important role in the fashion world, hence the hypothesis stating '*Khana* dress materials can be designed by applying elements and principles of design' is accepted. Very few of the respondents disagreed that surface quality of the material is soft, this may be because the yarns used for extra weft weaving is polyester yarns which may be slightly rough in texture and also due to change in the texture of the fabric which is adopted by changing the denting pattern *i.e.*, 3 yarns/ dent (Table 22).

### 5.8.3 Preference for the developed *Khana* designed kurtis

It is noticed from Table 23 and Fig. 11 that, the mean scores obtained for kurti-4 ($K_4$) is high by the students followed by kurti-5 ($K_5$). Irrespective of the kurtis, working women gave highest mean scores to kurti-5 ($K_5$) followed by kurti-4 ($K_4$). Minimum score is obtained to kurti-1($K_1$) by both students and working women. This may be due to motif clarity, motif combination, colour combination of motif and background and

overall appearance of the design. The opted score ranged from 3.5 to 5 which indicated that all the jacquard woven *Khana* kurtis are very good to excellent in motif clarity, motif combination, motif and background colour combination and overall appearance (Rashmi, 2016). However, the preference for kurti-5 ($K_5$) is highly significant, whereas significant preference was obtained for kurti-2 ($K_2$) and kurti-4 ($K_4$) may be because kurti-5 ($K_5$), kurti-4 ($K_4$) and kurti-2 ($K_2$) have elegant look, new pattern to the changing fashion, unique kurtis with ethnic motifs that is preferred by both students as well working women.

An Acceptability Index (A.I) was used to assess the percentage acceptability of jacquard woven *Khana* kurtis (Upadhayay and Babel, 2013). The parameters considered during calculating the acceptance percentage were motif clarity, motif combination, motif and background colour combination and overall appearance. The acceptance percentage of all the kurtis was more than 70 per cent. However, students gave high acceptance index for kurti-4 ($K_4$) and working women for kurti-5 ($K_5$). Thus, all the kurtis have high acceptance index (Table 24). Hence the hypothesis stating that 'the developed *Khana* dress materials are preferred and accepted by the consumers' is accepted.

### 5.8.4 Resemblance of jacquard woven *Khana* motifs with dobby woven *Khana* motifs

It is apparent from Table 25 that, the mean scores obtained for all kurtis by both students and working women were more than 4, which indicated that all the motifs woven with extra weft figuring (jacquard mechanism) resemble with extra warp figuring (dobby mechanism) motifs. This is because all the ethnic *Khana* motifs used were extracted from dobby woven materials only and a slight variation is marked due to digitization of the motif and variation in the motif size to fit the jacquard hooks (Byadgi, 2009).

### 5.8.5 Acceptability level for cost of the developed kurtis

The mean scores scored by all kurtis lied within one to two which indicated that all the kurtis are cheap to fair may be because of employment of powerloom with jacquard and murapatti attachment that reduced the labour charge and saved time. The

depreciation and variable cost for production is also less which contributed in the price of the kurti (Table 26). The cost may be decreased, when the punch cards were further used to produce different textiles.

# 6. SUMMARY AND CONCLUSIONS

The present study on “Development of designs from ethnic *Khana* motifs on dress materials” was conducted to investigate the problems faced by the *Khana* weavers of Guledgudda, to know the possibility of modifying and digitizing ethnic *Khana* motifs of Guledgudda, to incorporate these digitized patterns on Jacquard woven kurtis, to estimate the cost of these kurtis and to assess the consumer acceptance.

The study is carried out during the year 2015-17. A total of thirty Guledgudda *Khana* weavers were personally interviewed using self structured questionnaire to collect the general information on historical background of *Khana* materials , type of motifs, colours, raw materials and manufacturing process of *Khana* materials, demographic information of the *Khana* weavers and to know the problems faced by them. The collected ethnic motifs were designed and dress material designs were developed and selected by thirty textile experts. Finally these designs were digitized using GC Kala – 2004 with interface Adobe Photoshop (APS) software. The selected designs were woven on powerloom with jacquard attachment. The cost of production of these kutis was calculated. Finally, the fabrics were assessed for its acceptance by sixty respondents (thirty students and thirty working women). The data was statistically analyzed using frequency tables, percentages, chi-square, acceptability index and weighted mean scores.

The results of the present study are summarized as follows,

**Products manufactured at Guledgudda**

- The *Khana* fabric is woven on handloom using silk warp and cotton weft. Each *Khana* piece is about 80 centimeter width and 50 centimeter length. The *Khana* hand woven material was used by almost every woman in the village as choli along with *Ilkal* sarees

- At Guledgudda the weavers weave blouse, saree and dress material on powerloom with double dobby attachment

**Demographic characteristics of Guledgudda *Khana* weavers**

- Majority of the weavers were male members belonged to middle age group with secondary education and low income group
- Majority of the weavers belonged to nuclear family type with medium family size
- Majority of the wavers were independent weaver, working 12 hours per day whole year
- Cent per cent of the weavers had no subsidiary income hence, their only mode of income is weaving

**Weaver's problem**

- Hike in price for raw materials, non availability of required yarn counts as well as non-availability in adequate quantities of raw material were the main problems faced while procuring raw material
- Repair and maintenance of powerloom, lack of publicity and hike in transportation charges were main constraints faced while merchandising
- The problems faced before loom process by the weavers is higher as compared to the problems faced after loom process
- Majority of the weavers had back pain, eyesight weakness, dust allergy and joint pain. These problems occurred due to their age and working hours. However, increase in age causes the problems like back pain, eyesight weakness and joint pain increasing but not dust allergy. However, long duration working hours which affects all the above problems

**Preference for *Khana* designs**

- Total twenty designs consisting of ethnic *Khana* motifs were developed using Adobe Photoshop by applying elements and principles of design

- All the developed *Khana* dress material designs were appreciated and well accepted with regards to visual evaluation

**Digitization of *Khana* motifs**

- The ethnic *Khana* motifs were digitized by using GC Kala-2004 with interface Adobe Photoshop (APS) software
- The process of digitization involved three stages – design input, design processing and design plan
- The design input involved creation of motifs by transferring them onto the system through scanner
- Design processing was carried out by using Adobe Photoshop (APS) software where in the motifs were resized with respect to width and height and saved as 'bmp' file with output as simulation
- In design plan, the created 'bmp' file was further refined in GC Kala-2004 software with respect to colour of the point paper, design and grouping of squares

**Raw materials used**

- The jacquard woven kurtis composed of mercerized 2/100s and 2/40s mercerised cotton warp and weft respectively, with polyester of 110d extra wefts figuring on it

**Product development - Weaving of *Khana* designed kurtis**

- GC Punch, the card punch software interfaced with computerized card punching machine assisted in punching jacquard cards
- The punched cards were numbered and laced sequentially to form a pattern chain
- In total, 5 patterned punched cards were prepared for all kurtis

- Powerloom of 172 jacquard hooks was employed to weave extra weft figures, additional murapatti is attached to increase the speed and thus save the time and labour

**Description of newly developed kurtis**

- The newly developed jacquard woven *Khana* kurtis were woven with better fabric sett
- The length and width of the material remained same for all the kurtis, while weight varied. Thus weight of the material is depending upon addition of extra weft figuring yarns
- All the kurti materials were woven on powerloom with jacquard shedding mechanism, the base weave is plain weave and extra weft figures were inbuilt through shuttles by employing jacquard shedding mechanism

**Cost of production**

- It required one day for weaving one kurti. Total five days are required to weave all the kurtis
- Though the raw materials used in all the five kutis were same but amount of the extra weft yarns varied
- The total cost of jacquard woven *Khana* kurties was relatively less because of employing powerloom with jacquard shedding mechanism and murapatti attachment adopted for producing these patterns not only assisted in creating new designs but also saved time, money and labour

**Consumer acceptance**

- Comparatively working women have a great collection of *Khana* material than students because *Khana* is traditional wear, worn especially in combination with *Ilkal* saree. Most of the working women's of northern Karnataka have at least two *Khana* blouse material in their wardrobe

- Majority of the respondents agreed that the developed jacquard woven kurtis were woven based on elements and principles of design

- All the jacquard woven *Khana* kurtis were appreciated and well accepted with regard to the motif clarity, motif combination, colour combination of background and motif and overall appearance

- The acceptability indexes of all the kurtis were more than 70 per cent, which indicated all are having high acceptance index and potentiality of marketing

- Majority of the respondents agreed that the motifs of jacquard woven materials resembled to the motifs of the traditional dobby woven *Khana* materials

- The cost of each kurtis varies from Rs 300/- to Rs 600/- . Respondents said that the cost of all the kurtis were moderate and at affordable price

**Implication and recommendations**

Weaving is the income sector next to agriculture in India. Karnataka is famous for weaving tremendous variety of silk and polycotton sarees. In Karnataka Guledgudda is the only cluster producing *Khana* blouse materials. The unique designs produced by using dyed yarns represent the traditions followed by people of some regions of Karnataka and Maharashtra states. The motives used for the designs in Guledgudda cluster are extracted from nature, ancient stone sculptures of Badami and from the Hindu mythology. Though there is an increasing demand for these traditional blouses in international market, their utility value is decreasing due to modernization. The present study concentrates on development of designs from these ethnic *Khana* motifs on dress materials. The findings of the present study give a clear picture of the demographic characteristics of *Khana* weavers, problems faced by them, process of digitizing the ethnic *Khana* motifs, product development with jacquard shedding mechanism, cost of production and consumer acceptance for the developed *Khana* kurtis.

The implications and recommendations of present study are as follows:

- To minimise the problems faced by the weavers, measures should be taken while weaving and processing. There is a necessarily to publicizes *Khana* materials through advertisements, exhibition, fairs and showcasing the variegated *Khana* materials

- It is very essential to provide adequate raw materials at reasonable price, special training to improve existing weaving techniques

- Modern textile designers can adopt these digitized patterns in their products to create new style

- Besides made-ups, these designs can be incorporated in household textiles, furnishing, floor coverings, wall hangings and wallpapers that go a long way in fashion world as well as international market

- Weavers can manufacture exclusive designed made-ups and sarees that fetch better earning and in turn uplift their livelihood

**Suggestions for further studies**

- Problems faced by the powerloom weavers of Karnataka

- Development of jacquard woven kurtis from tribal art

- Digitizing the other ethnic motifs of India

- Market potential of jacquard woven *Khana* textiles

- Documentation of blouse materials of India

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## APPENDIX I

## Questionnaire I

**I. General information:-**

1. Name of the respondent:
2. Gender:
3. Age:
4. Caste/ religion:

| Name of the family members | Relation to the respondent | Age (years) | Education | Occupation | Income/ month |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

5. Income from other sources
   Yes/ No

   If yes, source

| Sl. no. | Source | Amount(in Rs.) / annum |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |

6. Origin of weaving

I. Historical Background:

II. Main occupation of the ancestors:

   a. *Khana* choli weaving
   b. *Khana* sarees
   c. Contemporary sarees
   d. Dress materials
   e. Any others

III. Loom existed

a. Throw shuttle (Year: )
b. Pit loom (Year: )
c. Fly shuttle (Year: )
d. Semi automatic (Year: )
e. Automatic (Year: )
f. Powerloom (Year: )

IV. Extra attachments used for weaving:

| Sl. no. | Attachments used | Preferences | | |
|---|---|---|---|---|
| | | Always | Sometimes | Never |
| 1 | Dobby | | | |
| 2 | Jacquard | | | |
| 3 | Any other | | | |

V. Products manufactured

| Sl. No. | Product | Cotton | Silk | Polyester | Cotton/ Polyester | Any other |
|---|---|---|---|---|---|---|
| 1. | Sarees | | | | | |
| 2. | Choli Material | | | | | |
| 3. | Lehnga pieces | | | | | |
| 4. | Dhoti | | | | | |
| 5. | Towels | | | | | |
| 6. | Others | | | | | |

VI. Mode of marketing:

| Sl. no. | Source of marketing | Preferences | |
|---|---|---|---|
| | | Always | Sometimes |
| 1 | Cooperative society | | |
| 2 | Master weavers | | |
| 3 | Wholesalers | | |
| 4 | Retailers | | |
| 5 | Consumers | | |
| 6 | Any other | | |

**II. Present status**

1. Type of weaver
    a. Master weaver
    b. Wage worker
    c. Marginal weaver
    d. Small weaver
2. Category to which you belong?
    a. Working independently
    b. Wage weaver
    c. Working for master weaver
    d. Working for co-operative societies
3. Raw material used
    a. Cotton yarn
    b. Silk yarn
    c. Rayon yarn
    d. Polyester yarn
    e. Blends/ union yarns
4. Source of procurement of raw material for weaving *Khana* textiles and mode of payment

| **Sources of procurement** | **Local dealers** | **Master weavers** | **Co-operative societies** | **Others** |
|---|---|---|---|---|
| On cash | | | | |
| On credit | | | | |
| In exchange of finished goods | | | | |
| On partial payment | | | | |
| Instalment payment | | | | |
| Any other | | | | |

5. Problems faced by the weavers while procuring raw material

| Sl. no. | Problems | Preferences | | |
|---|---|---|---|---|
| | | Always | Sometimes | Never |
| 1 | Untimely supply | | | |
| 2 | Non-availability in adequate quantities | | | |
| 3 | Hike in price | | | |
| 4 | Non availability of pure yarns | | | |
| 5 | Non availability of required yarn counts | | | |
| 6 | Untimely supply | | | |
| 7 | Any other (specify) | | | |

6. How many hours per day do you work?

| Sl. no. | Work done | Hours/day | | | | | |
|---|---|---|---|---|---|---|---|
| | | 4 hours | 6 hours | 8 hours | 10 hours | 12 hours | More than 12hours |
| 1 | Weaving | | | | | | |
| 2 | Agriculture | | | | | | |
| 3 | Any other | | | | | | |

7. How many months in a year are you engaged in weaving?

| Sl. no. | Work done | Months/year | | | | |
|---|---|---|---|---|---|---|
| | | Less than 4 months | 4-6 months | 6-8 months | 8-10 months | 10-12 months |
| 1 | Weaving | | | | | |
| 2 | Agriculture | | | | | |
| 3 | Any other | | | | | |

8. Mode of income received by the *Khana* weavers (in Rs)?

| Sl. no. | Income | Preferences | | |
|---|---|---|---|---|
| | | Always | Sometimes | Never |
| 1 | Per piece | | | |
| 2 | Weekly | | | |
| 3 | Monthly | | | |

9. Do you undertake dyeing?
   Yes/ No
   If yes

| Yarns | Dyes used | | | |
|---|---|---|---|---|
| | Direct | Azo | Disperse | Others |
| Cotton | | | | |
| Silk | | | | |
| Rayon | | | | |
| Polyester | | | | |
| Others | | | | |

10. Fabric Information of *Khana* textiles

| Sl. No | Material type | Threads/inch | | Length of material (m) | Width of the | | | Total Width (m) | Colour combinations used | Total weight (g) | Production week |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Ends | Picks | | Body (m) | Pallav (m) | Border (m) | | | | |
| 1. | Saree | | | | | | | | | | |
| 2. | Choli | | | | | | | | | | |
| 3. | Dress material | | | | | | | | | | |
| 4. | Any other | | | | | | | | | | |

11. Colour and colour combination of *Khana* textiles

| Sl. No. | *Khana* textiles | Colour combination | | |
|---|---|---|---|---|
| | | Body | Border | Pallav |
| 1 | Traditional *Khana* saree | | | |
| 2 | Contemporary saree | | | |
| 3 | *Khana* Choli | | | |
| 4 | *Khana* dress materials | | | |
| 5 | Any other | | | |

**MOTIFS**

12. Motifs used in *Khana* materials

| Sl. No. | Material type | Motifs used | | | Significance |
|---|---|---|---|---|---|
| | | Body | Border | Pallav | |
| 1 | Traditional saree | | | | |
| 2 | Contemporary saree | | | | |
| 3 | Choli | | | | |
| 4 | Dress materials | | | | |
| 5 | Any other | | | | |

13. Type of designs produced on the handloom sarees

| Sl. No. | Motifs | |
|---|---|---|
| 1. | Traditional | |
| 2. | Stylized | |
| 3. | Geometrical | |
| 4. | Combination of the above | |

14. Source of procuring the motifs of *Khana* textiles

| Sl. No. | Source | Preferences | | |
|---|---|---|---|---|
| | | Always | Sometimes | Never |
| 1 | Self creation | | | |
| 2 | Customers | | | |
| 3 | Master weavers | | | |
| 4 | KHDC | | | |
| 5 | Books/ Magazines | | | |
| 6 | Old samples | | | |
| 7 | Any other (specify) | | | |

15. Reasons for change in designs on *Khana* textiles by weavers

| Sl. No. | Reasons | Preferences | | |
|---|---|---|---|---|
| | | Always | Sometimes | Never |
| 1 | Fashion | | | |
| 2 | Demand | | | |
| 3 | Ease of weaving | | | |
| 4 | Order | | | |
| 5 | Cost of production | | | |
| 6 | Any other | | | |

**WEAVERS PROBLEMS**

16. Time requirement for weaving *Khana* textile and its respective wages

| Sl. No. | Type of *Khana* textiles | No of hours or days | Wages in Rs. |
|---|---|---|---|
| | Choli material/meter | | |
| | *Khana* sarees/ saree | | |
| | Dress material/ set | | |
| | Any other | | |

17. Are you working to full capacity
Yes/ No

If not, what are the reasons for low productivity?

| Sl. No. | Reasons | Preferences | | |
|---|---|---|---|---|
| | | **Always** | **Sometimes** | **Never** |
| 1 | Shortage of raw materials | | | |
| 2 | Shortage of finance | | | |
| 3 | Lack of proper dyeing facility | | | |
| 4 | Lack of technical know-how | | | |
| 5 | Lack of demand | | | |
| 6 | Other problems, if any | | | |

18. Source of getting loan for purchase of raw materials for weaving *Khana* textiles

| Sl. No. | Sources | Preferences | | |
|---|---|---|---|---|
| | | **Always** | **Sometimes** | **Never** |
| 1 | Money lenders | | | |
| 2 | Co-operative societies | | | |
| 3 | Master weavers | | | |
| 4 | Friends/ relatives | | | |
| 5 | Bank | | | |
| 6 | Other problems, if any | | | |

19. What are the difficulties faced in obtaining loan?

20. Source of marketing of *Khana* textiles

| Sl. No. | Sources | Preferences | | |
|---|---|---|---|---|
| | | **Always** | **Sometimes** | **Never** |
| 1 | Wholesaler | | | |
| 2 | Master weavers | | | |
| 3 | Co-operative societies | | | |
| 4 | Customers | | | |
| 5 | Any others (specify) | | | |

21. What are the constraints faced while merchandising

| Sl. No. | Constraints faced | Preferences | | |
|---|---|---|---|---|
| | | Always | Sometimes | Never |
| 1 | Lack of demand | | | |
| 2 | Non- profitable labour | | | |
| 3 | Hike in transportation charges | | | |
| 4 | Repair and maintenance of powerloom | | | |
| 5 | Lack of publicity | | | |
| 6 | Any other (specify) | | | |

22. Government/ Legal bodies support for existence of the weavers

a. Tax commission
b. Policy
c. Subsidy
d. NGO's
e. Any other

23. Health problems faced while weaving

a) Eyesight weakness
b) Joint pain
c) Back pain
d) Dust allergy

# APPENDIX II

## Questionnaire II

Kindly rate (√) the preference for the following developed *Khana* kurti designs for weaving. These designs are developed by implementing elements and principles of design and by considering the ethnic *Khana* motifs.

**1. General information**

**a. Name of the respondent :**

**b. Age :**

**c. Gender :**

**d. Designation :**

**2. Specific Information**

| Sl. No. | Type of motifs | Ranks | | | | | Remarks |
|---|---|---|---|---|---|---|---|
| | | 5 | 4 | 3 | 2 | 1 | |
| | **A. Kurta with border design** | | | | | | |
| 1. | Theru and Tulsi pan with double hardy | | | | | | |
| 2. | Theru and Anne Hejji | | | | | | |
| 3. | Tulsi pan and Soojimalige | | | | | | |
| 4. | Chitramala and Siddheswarmukuta | | | | | | |
| 5. | Suryanarayan and Tulsi pan with double hardy | | | | | | |
| 6. | Chitramala and Tulsi pan | | | | | | |
| | **B. Kurta with border and butta design** | | | | | | |
| 7. | Suranarayan, Theru and Siddheswarmukuta | | | | | | |
| 8. | Anne Hejji and Chitramala | | | | | | |
| | **C. Kurta with upper design** | | | | | | |
| 9. | Theru, Chitramala and Suryanarayan with single hardi | | | | | | |
| 10. | Chitramala, Siddheswarmukuta and Tulsi pan | | | | | | |
| 11. | Siddheswarmukuta and Theru | | | | | | |
| | **D. Kurta with centre front design** | | | | | | |
| 12. | Chitramala and Theru | | | | | | |
| 13. | Soojimalige and Siddheswarmukuta | | | | | | |
| 14. | Chitramala, Theru and Tulsi pan | | | | | | |
| 15. | Chitramala and Tulsi pan | | | | | | |
| 16. | Suryanarayan and Tulsi pan | | | | | | |
| | **E. Kurta with border and neck design** | | | | | | |
| 17. | Siddheswarmukuta a and Theru | | | | | | |
| 18. | Chitramala and Tulsi pan | | | | | | |
| 19. | Anne hejji and Tulsi pan | | | | | | |
| 20 | Siddheswarmukuta and Tulsi pan | | | | | | |

**Note: 5- Excellent, 4- Very good, 3- Good, 2- Fair, 1- Poor**

Signature:-

Name:-

# APPENDIX III

## Questionnaire III

Kindly rate (√) the preference for the following developed *Khana* kurtis. These kurtis are developed by implementing elements and principles of design with extra weft jacquard mechanism and by considering the ethnic *Khana* motifs.

**I. General information**

e. Name of the respondent :

f. Age :

g. Gender :

h. Designation :

**II. Specific Information**

**A. General opinion**

1. Does your collection have Guledgudda *Khana* apparels? Yes/No
2. Does your dress collection have any type of *Khana* motifs on apparels? Yes/No

   If yes, then which type of apparels you have with *Khana* motifs?

| Sl. No. | Apparels | Tick Mark | | |
|---|---|---|---|---|
| | | Casual wear | Functional wear | Office wear |
| 1 | Chudidar Kurta | | | |
| 2 | Salwar Kameez | | | |
| 3 | Sarees | | | |
| 4 | Ghagra Choli | | | |
| 5 | Trouser | | | |
| 6 | Jeans and Top | | | |
| 7 | Any other | | | |

3. Which type of value addition techniques do you prefer on apparels?

| Sl. No. | Value addition Technique | Ranks |
|---|---|---|
| 1 | Appliqué work | |
| 2 | Cut work | |
| 3 | Dyeing | |
| 4 | Hand embroidery | |
| 5 | Machine embroidery | |
| 6 | Painting | |
| 7 | Printing | |
| 8 | Weaving | |
| 9 | Zardosi | |

**B. An attempt was made to digitise the ethnic *Khana* motifs incorporated in the jacquard woven kurti by applying elements and principles of design. I request you to kindly give your opinion about the newly designed extra weft jacquard woven kurtis.**

4. General opinion for the developed *Khana* designed kurtis.

| Sl. No | Opinion based on Elements and principles of design | $K_I$ | | | | | $K_2$ | | | | | $K_3$ | | | | | $K_4$ | | | | | $K_5$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **SA** | **A** | **UD** | **D** | **SD** | **SA** | **A** | **UD** | **D** | **SD** | **SA** | **A** | **UD** | **D** | **SD** | **SA** | **A** | **UD** | **D** | **SD** | **SA** | **A** | **UD** | **D** | **SD** |
| 1 | Size and shape of the motif is proportionate | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Placement of the motif is proper | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Colour used for the design is appropriate | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | The colour used for motif suits the background colour | | | | | | | | | | | | | | | | | | | | | | | | | |

Note:-SA- Strongly Agree (5), A- Agree (4), UD- Undecided (3), D- Disagree (4) and SD- Strongly Disagree (5)

| Sl. No | Opinion based on Elements and principles of design | $K_I$ | | | | | $K_2$ | | | | | $K_3$ | | | | | $K_4$ | | | | | $K_5$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SA | A | UD | D | SD | SA | A | UD | D | SD | SA | A | UD | D | SD | SA | A | UD | D | SD | SA | A | UD | D | SD |
| 6 | Motifs are emphasized in the design | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | Unity is maintained all over the design | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | The design is visually satisfying | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | Surface quality of the material is soft in texture | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | There is a rhythmic movement in the design | | | | | | | | | | | | | | | | | | | | | | | | | |

Note:-SA- Strongly Agree (5), A- Agree (4), UD- Undecided (3), D- Disagree (4) and SD- Strongly Disagree (5)

| Sl. No | Opinion based on Elements and principles of design | $K_I$ | | | | | $K_2$ | | | | | $K_3$ | | | | | $K_4$ | | | | | $K_5$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SA | A | UD | D | SD | SA | A | UD | D | SD | SA | A | UD | D | SD | SA | A | UD | D | SD | SA | A | UD | D | SD |
| 11 | Proportion is maintained all over the design | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | Whole pattern is balancing with body and border designs | | | | | | | | | | | | | | | | | | | | | | | | | |

Note:-SA- Strongly Agree (5), A- Agree (4), UD- Undecided (3), D- Disagree (4) and SD- Strongly Disagree (5)

**5. Preference for the developed *Khana* designed kurtis**

| Sl. No. | Kurti No | Type of kurti | Parameters | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Motif clarity | | | | | Motif combination | | | | | Motif and background colour combination | | | | | Overall Appearance | | | | |
| | | | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| 1 | $K_1$ | Kurti with border design (Suryanarayan and Tulsi pan) | | | | | | | | | | | | | | | | | | | | |
| 2 | $K_2$ | Kurti with butta and border design (Anne Hejji and Chitramala) | | | | | | | | | | | | | | | | | | | | |
| 3 | $K_3$ | Kurti with upper designs (Theru, Chitramala and suryanarayan) | | | | | | | | | | | | | | | | | | | | |
| 4 | $K_4$ | Kurti with centre front design (Chitramala and Tulsi pan) | | | | | | | | | | | | | | | | | | | | |
| 5 | $K_5$ | Kurti with neck and border design (Sidheswarmukuta and Theru) | | | | | | | | | | | | | | | | | | | | |

Note: 5- Excellent, 4- Very good, 3- Good, 2- Fair and 1- Poor

**6. Does the digitised extra weft jacquard woven kurties with *Khana* motifs resemble same with the extra warp dobby woven blouse *Khana* material?**

| Sl. No. | Kurti No | Type of kurti | Types of motifs used | Resemblance of motif | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | SA | A | UD | D | SD |
| 1 | $K_1$ | Kurti with border design | Suryanarayan and Tulsi pan | | | | | |
| 2 | $K_2$ | Kurti with butta and border | Anne Hejji and Chitramala | | | | | |
| 3 | $K_3$ | Kurti with upper designs | Theru, Chitramala and suryanarayan | | | | | |
| 4 | $K_4$ | Kurti with centre front | Chitramala and Tulsi pan | | | | | |
| 5 | $K_5$ | Kurti with neck and border | Sidheswarmukuta and Theru | | | | | |

Note:-SA- Strongly Agree (5), A- Agree (4), UD- Undecided (3), D- Disagree (4) and SD- Strongly Disagree (5)

**7. Tick the acceptability level of cost of the jacquard woven kurtis?**

| Sl. No | Kurti Design | Cost of the kurti (in Rs) | Acceptability | | | | |
|---|---|---|---|---|---|---|---|
| | | | Very costly | Costly | Moderate | Fair | Cheap |
| 1 | Kurti 1 | 340/- | | | | | |
| 2 | Kurti 2 | 480/- | | | | | |
| 3 | Kurti 3 | 550/- | | | | | |
| 4 | Kurti 4 | 570/- | | | | | |
| 5 | Kurti 5 | 420/- | | | | | |

Signature:-

**DEVELOPMENT OF DESIGNS FROM ETHNIC *KHANA* MOTIFS ON DRESS MATERIALS**

**PRATIKHYA BADANAYAK 2017 Dr. SADHANA D. KULLOLI**
**Major Advisor**

## ABSTRACT

The present study entitled 'Development of designs from ethnic *Khana* motifs on dress materials' was conducted during 2015-2017 with objectives to design the *Khana* motifs for dress materials applying elements and principles of design, digitize the motifs through CATD and know the preference of the developed dress materials. Totally 30 Guledgudda weavers were personally interviewed with self-structured questionnaire to collect the *Khana* motifs, historical background of *Khana*, demographic characteristics and the problems faced. Twenty kurti designs were developed using ten *Khana* motifs by applying elements and principles of design and five best kurti designs were selected by taking preferences from thirty textile experts. The selected five designs were digitized and woven on powerloom with jacquard shedding mechanism. A five point rating proforma was distributed to 60 respondents (30 students and 30 working women) for taking preference regarding the newly developed jacquard woven *Khana* kurtis. Majority of the weavers faced the problems of hike in price (60.00%) of raw materials, repairs and maintenance of powerloom (53.33%), back pain (76.67%) and eyesight weakness (75.00%). Significant results were found with respect to working hours and eye sight weakness & dust allergy, whereas highly significant with joint pain and back pain. The jacquard woven kurtis comprised of 2/100s cotton warp and 2/40s mercerized weft and 110d extra weft polyester yarns. The cost of jacquard woven *Khana* kurtis varied from Rs. 350/- to Rs. 600/- depending on the amount of extra weft yarns used. Cent per cent of the respondents agreed that the developed jacquard woven kurtis were woven based on elements and principles of design, appreciated and well accepted with regard to cost, motif clarity, motif combination, background and motif colour combination and overall appearance. The acceptability index of all the kurtis was more than 70 per cent, which indicated high acceptance index.