ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 10| Issue: 10| October 2024|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2024: 8.402 || ISI Value: 1.188

REVIEW OF TEXTILE PRINTING: DIFFERENTIATION OF BLOCK, SCREEN & DIGITAL PRINTING

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Article DOI: https://doi.org/10.36713/epra18574
DOI No: 10.36713/epra18574

ABSTRACT

In India is well known for its traditional culture and art features. Hand block printing techniques are practiced in Rajasthan. Hence, the block printing is a slow process. Printing process of desired pattern is defined and repeated. The various styles for block printing are significant of the country in rich culture and heritage. It is a unique of each region will have a different variations of traditional craft. That was crafted for propagating Hindus mythology of depicted folk style story transform of imagination forms of God and goddess in literature. In this article, we will discuss about block printing, the development digital printing and manual of screen printing. The comparison of these three styles of textiles printing. It is a oldest method of art craft. The economics of ink jet printing are the main driver of digital printing technique. The costs of ink jet printing are lower for short run lengths than in traditional screen printing. This switches for longer runs production. Short-run textile printing commissions are the main source of jobs for small to medium scale textile producers in Ghana. And manual screen printing is the main process employed by these small-scale textile printers. These layers of limitations negatively affect the overall outcome of the prints. This is because, the large-scale textile factories in Ghana can print a minimum of 2400 yards due to their machine settings, calibration and running cost to make the least returns.

KEYWORDS: *Hand block printing, natural dyes, screen printing, techniques, digital printing.*

INTRODUCTION

Textiles are one of India's most popular and successful exports. Printing is an vital role in the textile manufacturing process. It is typically done on fabric, but can also be applied to finished garments. Textile printing implicate on applying of colour to fabric in particular patterns or designs. In well-printed fabrics, the colour is bonded to the material.

Woodblock printing is a method widely used in East Asia to print text, images, or patterns, with origins tracing back to ancient China. In the late 17th century, the French began directly importing Indian blue textile samples from their East Indian colonies by sea. As early as the 1630s, the East India Company was importing plain and printed cotton to the English market for large production. By the 1660s, British printers and dyers had started producing their own printed cotton for domestic sale. While these locally-produced prints were less colourful than the imported Indian textiles, they better aligned with British aesthetic preferences. Patterns were also dispatched to India for local artisans to replicate for sale back in England. Throughout the latter part of the 17th century, England boasted numerous dyeing facilities, with Lancaster and the River Lea near London being notable locations. To enhance the colour retention of English calicoes, the fabric underwent an extended bleaching treatment, which significantly boosted the longevity of the colours and necessitated a substantial amount of water from the surrounding rivers. A dyeing operation was initiated by John Meakins, a Quaker from London residing in Cripplegate. The Victoria and Albert Museum in London and the Smithsonian Copper-Hewett in New York hold examples of their textiles and patterns.

Textile printing is a process that involves applying colour to fabric in specific patterns or designs, creating a durable and long-lasting. Colour bonding: In properly printed fabrics, the colour is bonded with the Fiber, making it resistant to washing and friction. Difference from dyeing: Unlike dyeing, which involves uniformly covering the entire fabric with a single colour, printing applies one or more colours to specific areas of the fabric in defined patterns .Key characteristics: Colour is applied in specific patterns or designs, Colour is bonded with the Fiber for durability, Resists washing and friction, Involves applying multiple colours in defined patterns Textile printing offers a wide range of possibilities for creating intricate designs, patterns, and colours on various fabrics, making it a popular technique in the textile industry. Textile printing has a rich history in Europe, dating back to the 12th century, Dye liquification: European dyes tended to liquify, limiting the use of printed patterns, especially on fabrics that required washing. Design limitations: Larger, ambitious designs were reserved for decorative purposes like wall-hangings and lectern-cloths, which didn't require washing. Paper printing: With the advent of paper, textile printing technology was adapted for woodcut

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prints. Imported cloth: High-quality cloth was imported from Islamic countries, but at a higher cost.

Despite these challenges, textile printing continued to evolve, and new techniques were developed to overcome the limitations. The art form has since flourished, with various methods and technologies emerging to create stunning printed fabrics. Digital textile printing is a revolutionary technology that has transformed the textile industry. Design conversion: The design is converted into a digital format, typically a TIFF (Tagged Image File Format) file which are implemented in mechanically. Colour separation: The design is separated into individual colours, which will be printed separately. Inkjet printing: The design is printed onto the fabric using a large-format inkjet printer, which sprays tiny droplets of ink onto the fabric. Fixation: The printed fabric is then treated with heat and/or steam to fix the ink, ensuring durability and wash fastness. Digital textile printing offers numerous benefits, including: High-resolution images: Photorealistic prints with vibrant colours and intricate details. Short production runs: Print small quantities or one-off designs without significant setup costs. Flexibility: Print on various fabrics, including cotton, silk, polyester, and blends. Sustainability: Reduced waste and energy consumption compared to traditional printing method. This technology has opened up new creative possibilities for textile designers, enabling them to produce complex, high-quality designs with ease. Digital printing in textiles refers to the process of printing designs directly onto fabric using inkjet technology. Digital textile printing uses specialized inkjet printers designed for fabric. Digital textile printing is widely used in:

• Fashion: Custom apparel, accessories, and haute couture
• Home decor: Custom upholstery, curtains, and bedding
• Signage: Banners, flags, and displays

Textile printing in Ghana is a thriving industry with a rich cultural heritage. Ghanaian textile printing has a long history of traditional methods like Adinkra and Batik. Popular local fabrics like Kente, Adinkra, and Ankara are often printed using traditional methods Ghana has adopted modern digital textile printing technology, offering high-quality prints and quick turnaround times. Cities like Accra, Kumasi, and Takoradi have clusters of textile printing companies. Textile printing in Ghana caters to local demand for custom apparel, fashion, and home decor. Some Ghanaian textile printing companies export to international markets, particularly in Africa and Europe. The industry faces challenges like high production costs, limited access to finance, and competition from cheap imports Efforts to promote the industry include government initiatives, fashion events, and training programs.

Some popular textile printing companies in Ghana include:

• Ghana Textile Printing Company (GTP)
• Akosombo Textile Limited (ATL)

Ghana's textile printing industry has potential for growth, driven by increasing demand for local content, government support, and innovation.

1.1 THE PROCESS OF BLOCK PRINT

The technique of printing patterns using engraved wooden blocks is known as block printing. The textile printing techniques, this one is the oldest, most basic, and least quick. Manual block printing is a laborious procedure. However, it can produce extremely beautiful results, some of which are not achievable with any other technique. The process of block printing, often called stamping, involves carving a design into wood or other materials like linoleum, then rolling ink onto the raised portion of the block and pressing it onto cloth by hand. block diagrams are created by creating blocks, which are often rectangular forms that represent significant places of interest in the system from input to output. The relationships between these components are shown by the lines that connect the blocks.

- Carving the block is the first step in the centuries-old art of block printing, which involves a series of steps to create prints.
- To remove starch, the fabric is washed and bleached before it is ready to be used.
- When inking a flat surface, the artist begins by applying ink to the block and then rolls it onto the surface, covering the raised areas.
- Either by hand or with a printing press, the artist stamps the block onto the fabric.
- To ensure that the colors are completely absorbed, the fabric is cured for a few days.

1.1.1 Technique

Block printing is the ancient art of transferring designs from a Chiseled wooden 'block' onto a fabric or paper by dipped it in dye and colors. The wooden block has patterns that can be inspired by nature, birds, animals, and popular motifs.

A master block maker traces the chosen motif or design onto a wooden block, usually made of teak, a deciduous hardwood tree native to India. The wood block is oiled and sanded before the craftsman carefully chips away at the block, leaving behind the desired design for the stamp.

The creative process of printmaking involves transferring pictures from a matrix onto a different medium, usually paper or fabric. Woodcutting, etching, engraving, and lithography are examples of traditional printmaking methods; contemporary artists have broadened the range of techniques to include screen printing.

1.2 THE PROCESS OF SCREEN PRINTING

A popular printing technique used to create vibrant designs on various materials. Screen printing involves pushing ink through a mesh screen onto a surface which creating an image. By making specific areas of the screen impervious to ink, a stencil is formed, controlling the design. This versatile process requires From manual to automatic and digital methods, screen printing offers diverse applications and opportunities. It was in bullet and pointed.

1.2.1 Types of screen printing

1. Hand-screen printing: Manual process using a squeegee.
2. Automatic screen printing: Machine-based process.
3. Screen coating: Applying a layer of emulsion to screen.

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1.2.2Common Applications

T-shirts and apparel, Posters and prints, Labels and packaging Screen printing continues to evolve, offering creative possibilities for artists, designers, and industries worldwide.

1.3 THE PROCESS OF DIGITAL PRINTING

A revolutionary technology transforming the printing industry. Here's a comprehensive overview. The process of printing digital images directly onto a range of media substrates is known as digital printing. Unlike offset printing, this method does not require a printing plate. The digital printing press can be directly fed digital files, such as PDFs or desktop publishing files, to print on a variety of substrates, including paper, picture paper, canvas, fabric, synthetics, and cardboard.

1.3.1 Types of Digital Printing

- Inkjet Printing: Uses ink droplets to print images.
- Laser Printing: Uses laser beams to produce electrostatic charges.
- Toner-Based Printing: Uses dry toner for printing.
- Solvent-Based Printing: Uses solvent-based inks for vibrant colors.
- UV Printing: Uses ultraviolet (UV) inks that cure with UV light.

1.3.2 Digital Printing Techniques

- Dye-Sublimation Printing: Transfers dye onto materials using heat.
- Direct-to-Garment (DTG) Printing: Prints directly onto garments.
- Large-Format Printing: Prints large-scale images and banners.
- 3D Printing: Creates three-dimensional objects layer by layer.

1.3.3 Applications

Textiles (fabric, apparel, upholstery), Signage (banners, posters, displays), Graphics (photographs, artwork), Packaging (labels, boxes, bags), Industrial (metal, plastic, wood), Medical devices

Digital printing continues to evolve, offering innovative solutions for various industries, from textiles to industrial applications. Its flexibility, quality, and efficiency make it an essential technology for modern printing needs.

1.4 COMPARISON OF HAND PRINT, SCREEN PRINT, AND DIGITAL PRINT

ATTRIBUTE	HAND PRINT	SCREEN PRINT	DIGITAL PRINT
Design	Manual and highly detail	Low number of colour, high quantity, high durability	Lower quantity, more complex design
Process	Wood craved into block and ink applied	Ink forced to stencil	Ink applied in form of tiny droplets
cost	Less cost effective	Costly than digital printing	Cheaper than screen printing
Time required	1 day process	10 minutes for one colour but longer in stencils preparation	Each design in 8 to 45 seconds

Table 1

The table 1 shows that comparing of three methods of prints in textile printing.

RESULT

Textile printing can produce a variety of effects depending on the methodology employed. Vibrant hues When acid ink is required to reach the fabric's reverse side, it can create vivid hues on both natural and synthetic textiles. enduring prints Flex printing, another name for heat transfer vinyl (HTV) printing, creates strong prints that stick to the cloth. Bright, eye-catching designs High-resolution, color-accurate prints with fine details and intricate colour gradients can be produced with digital printing. Environmentally friendly Digital printing can be an environmentally friendly alternative to older methods, lowering water use and pollutants.

Hand block printing excels in uniqueness and sustainability. Screen printing provides high-quality images at scale. Digital printing offers speed, versatility, and precision. Integration of traditional techniques with digital technologies. Increased focus on sustainability and eco-friendliness. Advancements in ink and material technologies. Expanded applications in industries like healthcare and aerospace. Continued innovation in 3D printing and additive manufacturing.

CONCLUSION

In this, we are comparing the three methods of textile printing which are in still practicing. From hand block printing is traditional methods, consider rural areas and requires skilled labour. Screen printing is methods take place in textiles industry which will be in small scale and small production Digital textile printing is widely used methods and larger production. In this Ghana Textile Printing is more famous and modern technique of prints. It has completely transformed the home décor and fashion industries, and its use is only anticipated to grow in the future. Hand block printing, screen printing, and digital printing each offer distinct advantages and limitations. Hand block printing excels in uniqueness and sustainability, while screen printing provides high-quality images at scale. Digital printing revolutionizes printing with speed, versatility, and precision.

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REFERENCE

1. *Jurgen weiser, friedric -Wilhelmraulfs, Karl Siemensmeyer BASF Aktiengesellschaft, Ludwigshafen (2000). Digital textile printing*
2. *Charles K. Ntim, Sophia P. Ocean, Richard Acquye(2017). Digital Textile Printing: A New Alternative to Short-Run Textile Printing in Ghana, Vol.2, No. 1:60-65*
3. *Preetha. R (2024). A Review on Hand Block Printing in India, 5(1), 315-330*
4. *Sadia Qutub Hashmi, Sumbal Sarfraz, Suffah Naeem (2022). Hand Block Printing: The Ancient Craft of South Asia, Vol.3, No. 2(38-47)*
5. *Priyanka U and Nirmala Varghese (2023). Design transformation: Ajrakh traditional printing to hand painting,Vol. 14(2), 335-341*
6. *Dr. Sadhana Chouhan, Sunita Patil (2019). THE ECO-FRIENDLY BAGH PRINTING ,vol. 7, ISSN-2350-0530(O)*
7. *Malini Divakala(2024). The Indian Kalamkari (Vraathapani): A Case of Optimism, Resilience and Transformation in Cultural Textiles*
8. *Alicia Ory DeNicola. Working Through Tradition: Experiential Learning and Formal Training as Markers of Class and Caste in North Indian Block Printing, vol. 26, No. 2*