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Technological Advancement of Textile Industry: A Spatial Analysis of Mau District, Uttar Pradesh, India

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ABSTRACT

Technological Advancement plays a vital role in the economic development of a region but many regions face the regional disparity in the technological advancement of industry mainly due to historical process of development. The present paper is an attempt to analyze the technological advancement at inter-blocks of Mau district. Mau district has suffered from intra-regional disparity and inequality such as some blocks of this district are very advanced in industrial development and some blocks are very backward in industries due to inefficiency of Technological Advancement. The present work is entirely based on primary sources of data which is collected from the field survey 2016. This paper tries to point out the role of technological advancement of textile industry in the study area and tries to find out the causes of advancement and backwardness into the inter-block level variations in industrial development. In the present work simple percentage method has been used for the analysis of data to demarcate the regional disparity. Policy measures have been suggested to reduce the inter-block disparity and to achieve the technological advancement to grow overall growth and development of textile industries in the regions.

Key Words: *Technological advancement, block wise variations, level of industrial development.*

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INTRODUCTION

Technological advancement plays a important role in advancement of a firm and they further lead to good productivity. It also leads to an increase in the available supplies of productions. Further, more generally, technological advancements result in enhancement of labour productivity, capital betterment, and energy efficiency. Thus because of technological edge, it becomes possible to increase the yield. However, from the Indian perspective, there are many studies on technological advancement. Pendse et al (1996) made an attempt to study the productivity trends and technological change in Vanaspati Ghee industry in Madhya Pradesh during the period from 1973-74 to 1988-89 with respect to ASI data. It has been found that productivity trends and technological changes has led to capital growth. This has highlighted by Shyamala Murthy (1999). He has examined the growth, factor productivity, factor substitution and technical progress in small-scale textile products industry during 1980-1997.

Geographical Location and Size

Mau district is one of the districts of Uttar Pradesh. It lies between 83° 17’ to 84° 52' East longitude and 24° 47' to 26°17' north latitude and is situated in the southeastern part of the state. The Mau district is divided into 4 tehsils that are Maunath Bhanjan, Mohammadabad Gohna, Ghosi and Madhuban tehsils. There are 9 development blocks which form the district, namely Dohrighat, Fatehpur Madaon, Ghosi, Kopaganj, Ratanpura, Pardaha, Ranipur, Mohammadabad Gohna and Badraon.

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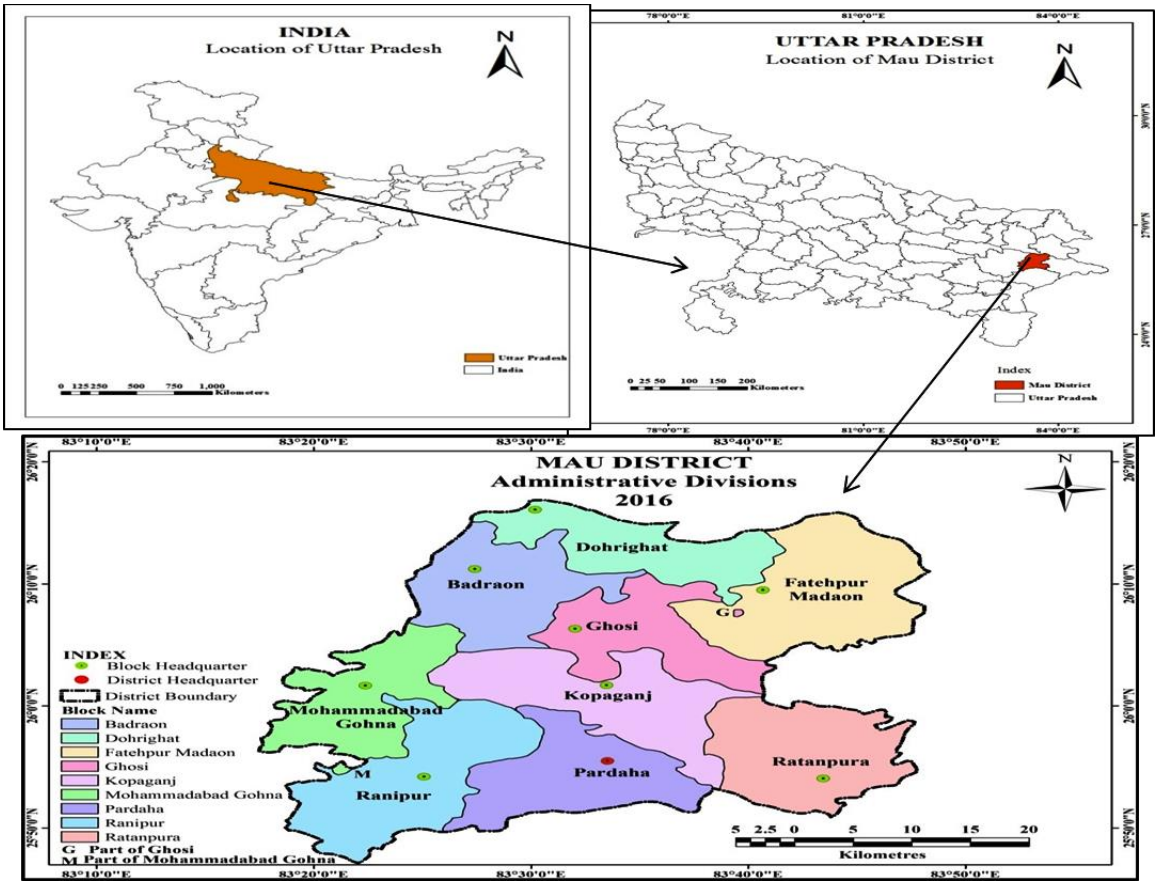

The neighbouring districts of Mau are at its north, Ghaghara river is the natural boundary which separates Mau from Gorakhpur and Deoria districts, Ghazipur district is in the south, Ballia district is on the east & Azamgarh district is on the west side. According to 2011 Census, the total geographical area of the district is about 1714 square km. According to 2011 census, the total population of Mau is 2,205,968 and density of population is 1,287 people per square km.

Technological Advancement of Textile Industry

According to Annual Survey of Industries data on the factory sector units, gross fixed capital formation at 1993-94 prices showed a cyclical pattern – it first increased rapidly during 1991-1996, then started declining and reached the bottom of the cycle in 2002 and thereafter it started moving uphill and nonstop till 2005 about which latest data are available.

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Data[1] shows that disaggregated data highlights that the three sections namely spinning, weaving and finishing of textiles has obtained the foremost share of the investments. Nonetheless investment, increased rapidly during 1990s and then it plunged and stayed at lesser ranks till the mid of 2000s.

Table 1: Block wise Technological Advancement of Textile Industry in Mau District, 2016

Blocks	Indicators of Technological Advancement (in Percentage)							
	Yarn Processing	Zari Machine	Cutting Machine	Embroidery Machine	Calendar Machine	Rapier Powerloom	Dying Machine	Generator
Dohrighat	--	--	--	--	--	--	--	4
Ghosi	--	6.67	6.45	8.7	10.53	8.57	--	20
Badraon	--	--	--	--	--	--	--	--
Fatehpur Madaon	--	--	--	--	--	--	--	--
Pardaha	89.04	66.67	32.26	69.57	52.63	34.29	89.74	24
Kopaganj	4.11	13.33	12.9	17.39	21.05	14.29	3.85	28
Ranipur	--	--	--	--	--	--	--	--
Ratanpura	--	--	--	--	--	--	--	--
Mohammadabad Gohna	6.85	13.33	48.39	4.35	15.79	42.86	6.41	24
Total	100	100	100	100	100	100	100	100

***Source**: Based on Field Survey, 2016*

Yarn Processing Machine

According to field survey, it is found that the main raw materials used in textile industries located in Mau district are synthetic yarn. To produce synthetic yarns, manufacturing industries imports raw material mainly 'Gray' from Gujarat, Surat, and Kanpur. These yarn manufacturing machines were mainly introduced here in 2005-06 and these machines are located mainly in the city areas of Maunath Bhanjan of Pardaha

[1] It includes the pictures which were taken during the field survey. These are placed under appendix part of the study.

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block. The processing of the gray raw material to make usable yarn is done in many steps. First of all, the process of twisting is done by TFO machine followed by the process of dying. Thirdly, the process of hydro drying is carried out. Finally, we get finished Monica yarn.

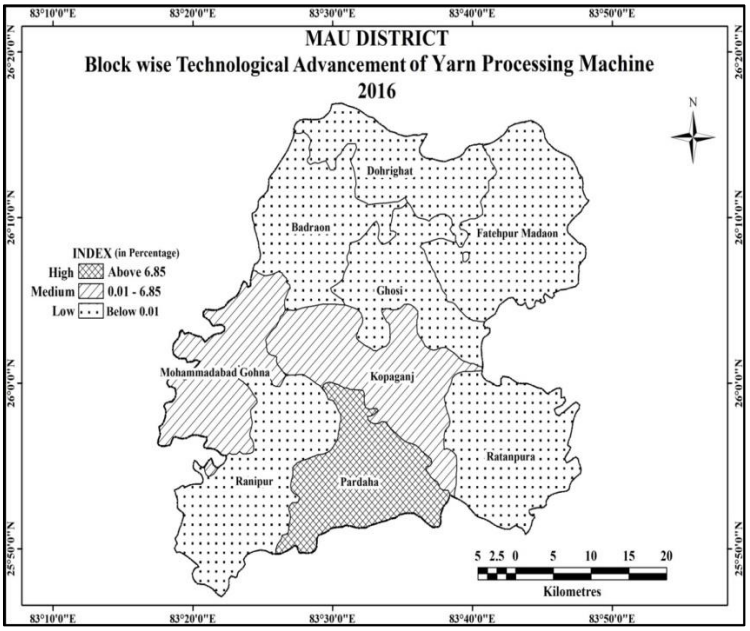

Fig. 4.9

The purchasing rate of gray raw material is nearly Rs. 120 per kilogram and processed to make different varieties of synthetic weft yarn like Monica, Texrise, Dupian, Masarize, Acraili, Aliflaila, Karishma etc. and then the final product is ready to sale is approximately Rs 275 per kilogram. The average production of synthetic yarn per day is 325 kilogram in a single yarn processing industry. The main yarn processing centres in Mau district are Palki Yarn Processing Industry Badua goddam, Permod Yarn Processing Industry Ghazipur Tiraha, Metro Yarn Processing Industry near Sitla Mandir, Kaisar yarn Processing Industry opposite Sri Palace and Abrar bypass road near Aliya Hospital. On an average, they have 10 to 25 yarn processing machines in which they produced different types of weft finished yarn. They are exported finished yarn within neighbouring district such as Azamgarh, Gorakhpur Balia, and Varanasi etc.

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Block wise analysis of technological advancement of textile industry in Mau district is shown in Table 4.10 in which the highest percentage of yarn processing machine has been found in Pardaha block (89.04 per cent) it is the highest producing block of Mau district because Maunath Bhanjan is the headquarter of the district and highly advanced in textile industry to produced silk sarees. On the other hand blocks like Mohammadabad Gohna (6.85 per cent) and Kopaganj (4.11 per cent) because of the comparatively low level of technological advancement.

Zari Machine

In 1990s, Zari is used in border and booti. In the beginning, Zari brought up from Surat and Banaras. The consumption of Zari increased, therefore, the demands were increased and consequently, 1500 units of Zari machine are running in and around Mau. Each unit of Zari machine has 120-240 spindles. With the help of Cutter Machine, Rolex sheets cuts and wrapped into a bobbin and after that, it is twisted on the 100 deniers gray polyester yarn. Zari machine is also one of the important parts of technological advancement in textile industry of Mau district. Table 1 reveals the percentage distribution of Zari machine in Mau district in which the highest percentage is located in Maunath Bhanjan city of Pardaha Block (66.67 per cent) followed by Kopaganj and Mohammadabad Gohna found (13.33 per cent) and Ghosi (6.67 per cent) only.

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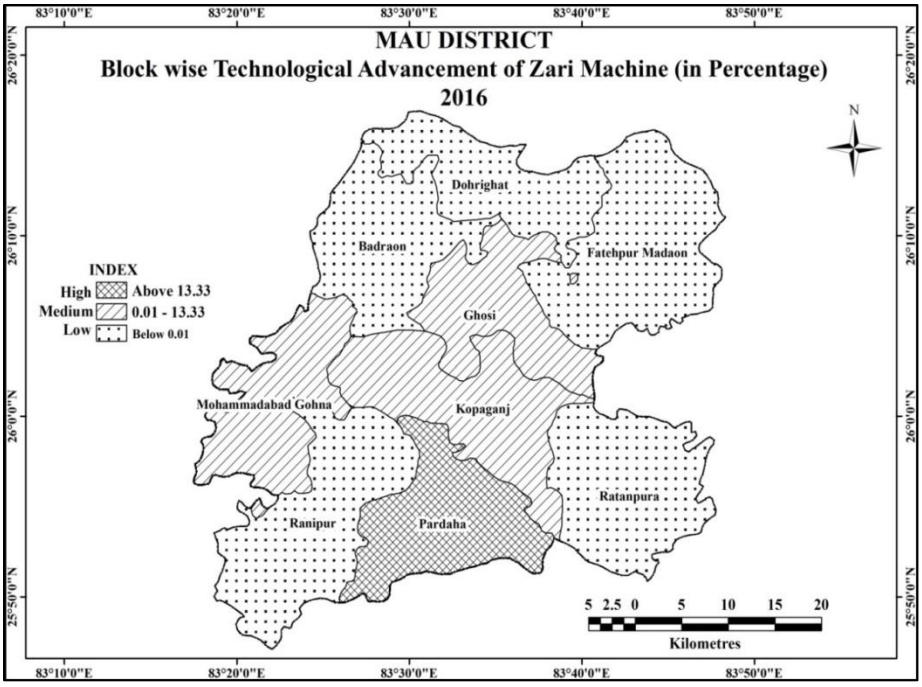

Fig. 4.10

Cutting Machine

The production of different varieties of sarees in the textile industry in which the finishing works is necessary to complete the final product. According to the field study, it was found that the varieties of sarees such as cut-n-booti, Anchal, Jhalak, ambos, etc. in which different designs are produced so after completed sari on a power loom it's necessary to cut the unusable materials from the sarees. Traditionally cutting work is completed by manually in which 5 rupees per sari to 35 rupees per sari charges by cutting machine. In the manual work, some time cut the sari and Sari are totally damaged. So, Cutting machine is one of the latest introducing machines in Mau district to work efficiently and give high production. The cutting charges by the cutting machine are also lower than manual charge such as 10 to 15 rupees per sari with congested designs.

The cutting machine completed near about 500 sarees per day with safety and security. The cutting machines were introduced in Mau district after 2010-11 and mainly found in Maunath Bhanjan have 6 machines and Khairabad has 10 machines. The cutting machine also creates unemployment in lower class weavers or a poor allied worker whose livelihood mainly depends on the wages comes from cutting of sarees. The

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purchasing rate of cutting machine is nearly 12 lakhs and mainly imported from Surat, Ahmadabad Gujarat. Figure 4.11 reveals the technological advancement of textile industry in which the cutting machine play very important role to give high production with low cost in finishing works. Block wise distribution of cutting machine in the highest percentage of cutting machine is recorded in Mohammadabad Gohna (48.39 per cent) followed by Pardaha (32.26 per cent), Kopaganj (12.90 per cent) and Ghosi (6.49 per cent). The highest is found in Mohammadabad Gohna because it's also part of employment so, they complete their finishing work within a block and also bring from the other blocks like Pardaha.

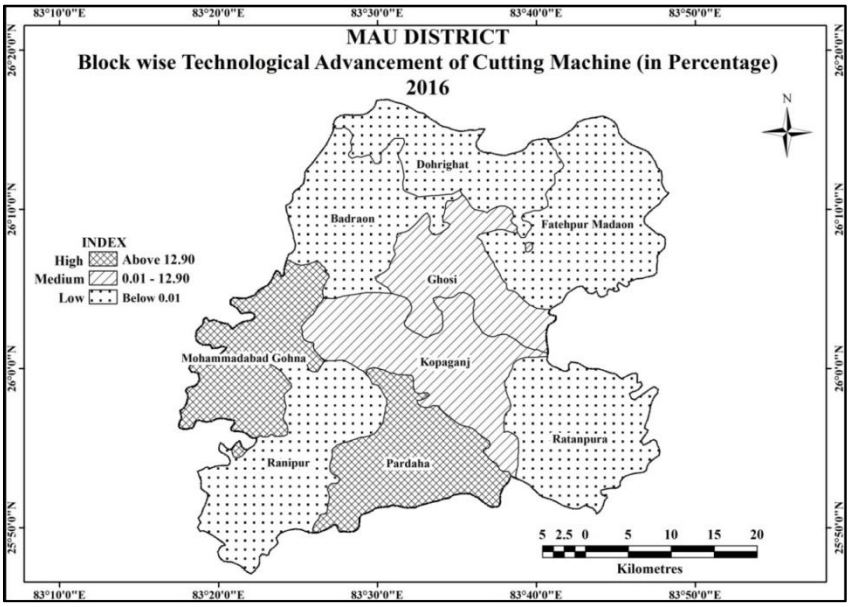

Fig. 4.11

Embroidery Machine

This new technology of value-added work, upgraded technique adopted by Mau saree industry is taken as the second attempt after Deca and Wax Calendars of up gradation in the earlier time in 2006-07 and the period was the age of transition in the history of saree industry in Mau. The embroidery machine is working as a supplementary work in the textile industry because it makes the sarees more attractive and valuable. According to the field study, near about 90 per cent of embroidery machine has been

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located in Maunath Bhanjan City of Pardaha block. The main raw materials uses are Cheeku, Pista, Zari, Resham, Flora, Bright, Polyester etc. The average cost per textile product is about 15 rupees and produced average 100 numbers of Piece per day. It completed nearly 2 lakh stitch per day and the average monthly wages of labours are 5000 to 6000 rupees. This machine mainly imported from Surat and Ahmadabad, in which new machine has been purchased in 12 lakh and the second-hand machine has been purchased approximately 3 to 4 lakh rupees.

Table 4.10 reveals the block wise technological advancement of textile industry in Mau district in which the Embroidery machine play very important role to grow up and the existence of textile work in the district. This machine is fully computerized and produced value-added works on Sarees. A field study found that the highest percentage of embroidery machine has been recorded in block Pardaha (69.57 per cent) followed by Kopaganj (17.39 per cent), Ghosi (8.70 per cent) and Mohammadabad Gohna (4.35 per cent). The highest percentage is recorded in Maunath Bhanjan city of Pardaha block because it is the hub of textile works, so, the level of entrepreneurship is also high to introduced new technologies to improve the level of textile products.

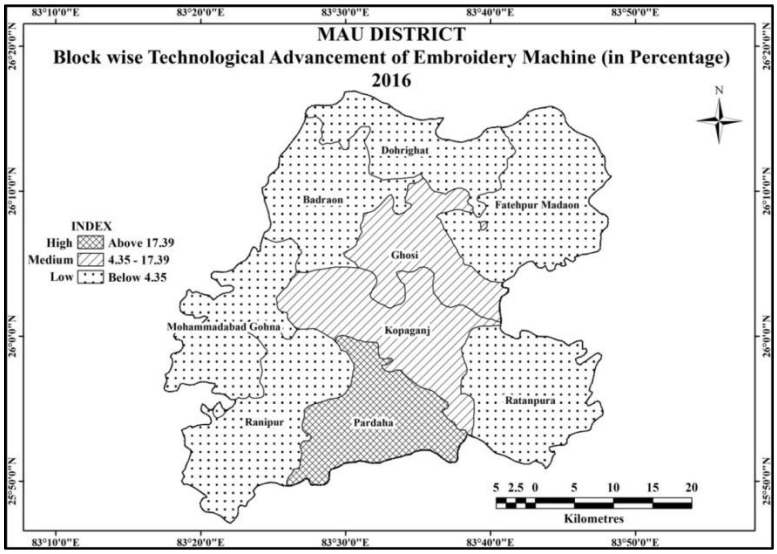

Fig. 4.12

Calendar Machine

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After passing all above process, sarees are ready for finishing. In Mau, three types of the calendar (finishing) are available. 1-Heater Calendar, 2- Wax calendar and 3- Deca calendar in which Heater calendar are used since the very early times and the technique is too old and traditional. To adopt new and advanced technology having 5-7 rolls high-speed wax calendar are steam based were introduced in Mau, in 2001. Decatising machine launched in 2002, after one year of wax. This up gradation is taken as the first attempt in the history of Mau in the field of saree industry.

The block wise technological advancement of textile industry in Mau district in which, Calendar machine is the backbone of textile products. Without Calendaring silk Sarees becomes tough to be produce in large number, so this play very important role to grow up the textile industry of Mau district. Block wise field survey found that the highest percentage of Calendar machine is located in Maunath Bhanjan city of Pardaha block (52.63 per cent) and mainly located in main urban centre and sub urban centres like Kopaganj (21.05 per cent), Mohammadabad Gohna (15.79 per cent) and Ghosi (10.53 per cent) respectively. The highest and lowest are found on the basis of the availability and low availability or not availability of entrepreneurship in the blocks.

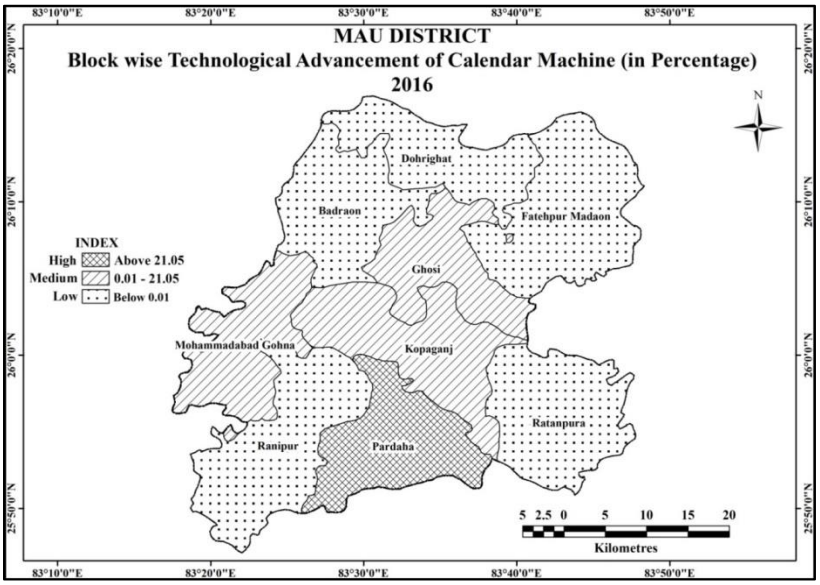

Fig. 4.13

Rapier Powerloom

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Rapier power loom is most advanced and latest technological machine in Mau district. This machine was adopted after 2015 and it's produced multi types of textile productions such as Sarees, Suit, Chader, Dari etc. This machine is purchased from Surat and Ahmadabad and the rate of the machine is approximately 12 lakh. Rapier power loom helps in bringing significant changes through various the types of textile products and hence enhance the level of textile productions because it has the ability to give high production with multiple varieties. It has average 10 to 12 thousand fix labour wages in which these yield about 15 to 20 Pieces of textile products per day.

Table 1 shows the blockwise analysis of technological advancement in Mau district in which Rapier power loom is the latest technology for the district. The highest percentage of Rapier Powerloom are located in Mohammadabad Gohna (42.86 per cent) followed by Pardaha (34.29 per cent), Kopaganj (14.29 per cent) and Ghosi (8.57 per cent) respectively.

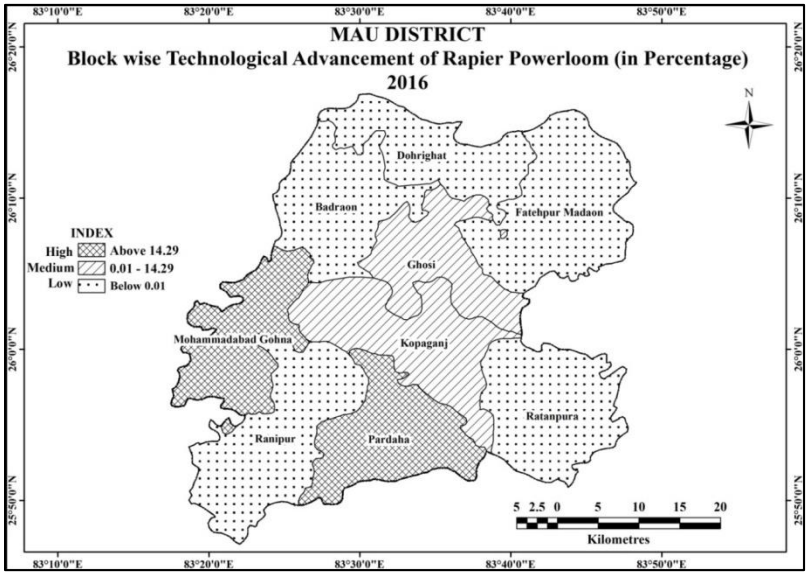

Fig. 4.14

Dying Machine

From the very beginning of this conventional and traditional business, the components of Sarees like raw material are being coloured manually. The nylon (warp) is coloured into 6-10 colours and cotton and synthetic (weft) is also coloured as the

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requirement and demand of market and fashion. The crystal yarn based sarees are produced in gray. These Sarees coloured as the requirement in contrast shade and self as well.

Table 1 reveals the technological advancement of textile industry in which the dying machine is working parallel with yarn processing machine because according to the demand and supply gray raw yarn coloured with different colours. Block wise technological advancement in which the highest percentage of dying machine has been found in Pardaha block (89.74 per cent) followed by Mohammadabad Gohna (6.41 per cent) and Kopaganj (3.85 per cent) only and other blocks have not found any percentage of dying machine.

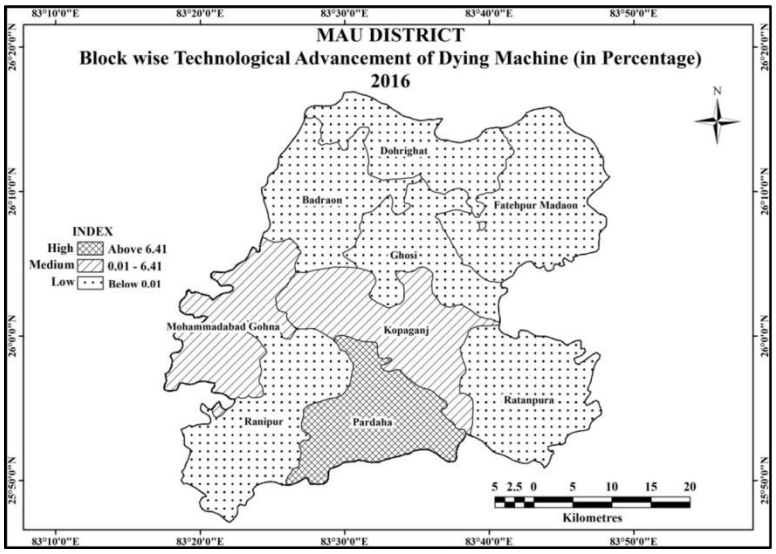

Fig. 4.15

Generator

The power supply is the most important source to operate electronic machines and all the technological advancement is directly or indirectly depends on the electric supply. If the power supply is not proper the textile industry could not flourish or grow upwards. Thus, the gap of the proper electric supply Generator plays an important role to operate the electronic machines. Table 1 reveals the level of technological advancement of textile industry in Mau district in which block-wise highest percentage of Generator is recorded in Kopaganj (28 per cent) followed by Pardaha and Mohammadabad Gohna (24 per cent),

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Ghosi (20 per cent) and Dohrighat (4 per cent). The highest and the lowest percentage depends on the availability and unavailability of electricity and also affordable conditions of the textile workers.

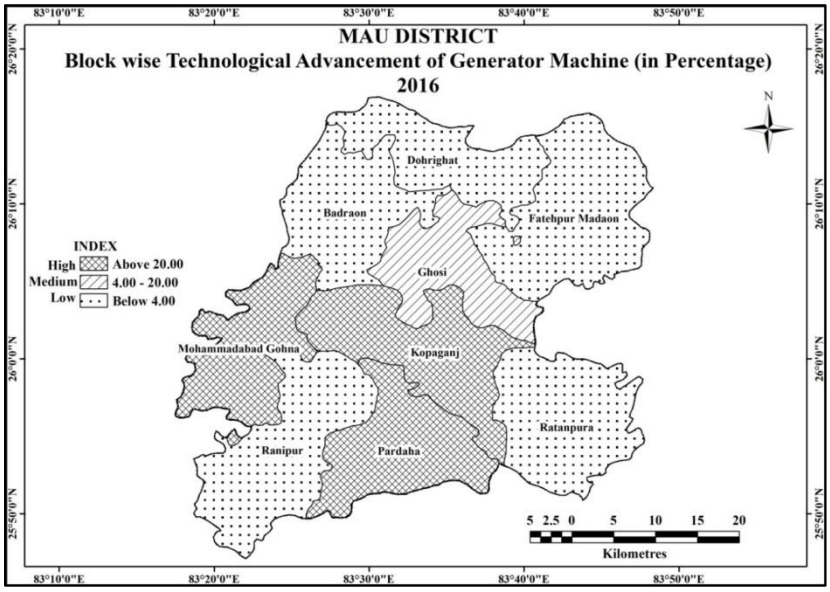

Fig. 4.16

Conclusions:

There is no doubt that technological advancement plays dominant role in the textile Sector both in terms of quantity and quality enhancement. In the study we found that the economy of Mau district is basically based on textile industry producing goods like sarees. With the advancement of technology especially the modern Chinese made machines like rapier power looms which are affordable has helped to improve the socio-economic conditions of the poor people. Further it has been found that the distance between the small scale industries and the market plays dominant role in the income of the marginal workers and entrepreneurs.

Appendix:

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Pictures taken during Field Visit of different textile Units in Mau district

Following images should be refered as:

a) **Plate 4.10 (Yarn Processing Machine)**
b) **plate 4.12 (Zari Machine)**
c) **Plate 4.15 (Finished Product – Sari)**
d) **Plate 4.14 (Cutting Machine)**
e) **Plate 4.18 (Calendar Machine)**
f) **Plate 4.23(Processed Weft Fibre)**
g) **Plate 4.16 (Embroidery Machine)**
h) **Plate 4.22(Processed Weft Fibre)**
i) **Table 4.20 (Dying Machine)**
j) **Plate 4.21(Dying Machine)**
k) **Plate 4.13 (Raw Material of Zari Machine)**

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