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# Review on Design and Analysis of Critical Component of Hand Loom and Paddle Loom to Check the Feasibility to Operate It on Solar Energy

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**ABSTRACT:** A Loom is a device used to weave cloth and tapestry. The basic purpose of any loom is to hold the warp threads under tension to facilitate the interweaving of the weft threads. The precise shape of the loom and its mechanics may vary, but the basic function is the same. The process of producing a fabric the process of producing a fabric by interlacing warp and weft threads is known as weaving. The machine used for weaving is known as weaving machine or loom. Weaving is an art that has been practiced for thousands of years. The earliest application of weaving dates back to the Egyptian civilization. Over the years, both the processes as well as the machine have undergone phenomenal changes. As of today, there is a wide range of looms being used, right from the simplest handloom to the most sophisticated power loom. In this rang, the most widely prevalent loom, especially with reference to India, is the ubiquitous plain hand loom. In historical days Hand Loom covered the most of the part of India in the employment sector. There is possibility to enhance Hand Loom Industries. By adapting some modern techniques in the hand loom

***Keywords/ Index Term***— *Hand Loom, warp, weft, Weaving, fabric.*

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## I. INTRODUCTION

Handlooms are a voice of India's rich heritage. Indian handlooms have its unique creativity. Also this sector plays an important role by providing substantial contribution to GDP of India. The challenges in this sector include inadequate training for upgradation of skills, unorganised structure, weak financial base of the weavers etc. But the major and fundamental challenges are lack of innovative designs and inadequate fashion marketing. Only a designer can be collaborate handlooms with fashion marketing to meet the challenges that results the development of this sector. Handloom is a traditional product. Marketing and distribution system for handloom is also a conventional type. West Bengal, Tamilnadu, Uttar Pradesh, Andhra Pradesh, Assam and Manipur are the major handloom states in India. Three-fourth of handloom weaving in the country comes under these six states. Almost all handloom products in India is for domestic market. Only 1.3 percent of working looms produce for export markets. Marketing is a major constraint for the handloom sector.

There is more work to the Weave in the weaving process. This manual work can be reduce by the the use of solar energy. It can reduce the fatigue of the operator or weaver. If possible we can change traditional mechanism by using modern technique. Solar energy is free source , by using this can reduce the manual work. We can implement new technology in the Hand Loom industries. If we use the some modern technique to produce fabric on Hand Loom ,it can give the best quality fabrics . There are different types of loom . So we can develop different types of weaving machine. Also can implement new techniques.

Textiles are an important element in everyday life and fulfill this need with handlooms since a history almost as old as mankind itself. Handloom cloth is cloth woven by hand, or cloth woven on manually operated looms. One of the largest family-based traditional industries in India is handloom.

## II. LITERATURE REVIEW

Indira Khadse, **[11]** in this book she explained the methods of fabric construction. Also give the idea about the technique which is use for the different types of weaving. For example simple weaving and about knitting .knitting is the type of weaving . She explained Handloom in details .Gave the all idea about the Hand Loom machine.

Dr. Mrs. Ujwala Wairagade, Mrs. Anwita Agrawal, **[12]** the Authors of the book explained various information about the Hand Loom. She explain about the different types of Hand Loom weaving . They explained about the different types of Loom for example Pit Loom, Frame Hand Loom& Power Loom. Also they explained about all the part of Loom. As Warp Beam, Cloth Beam, Heddle Frame, Reed, Shuttle, Bobbin, Shuttle Box, Slay, Treadle, and Handle.

Dr. R. Emmaniel , **[1]** In his study he gives idea about important of Khadi and engagement of people. Handlooms are an important craft product and comprise the largest cottage industry of the country. Millions of looms across the country are engaged in weaving cotton, silk and other natural fibers. There is hardly a village where weavers don't exist each weaving out the traditional beauty of India's own precious heritage. The last 100 years have seen the growth of mechanized textiles production internationally.

Rayapati Raveendra Nadh, Dr. P. Venkata Rao, Dr. B. M. HarshaVardhan **[7]** describe that handloom is a traditional product. Marketing and distribution system for handloom is also a conventional type. West Bengal, Tamilnadu, Uttar Pradesh, Andhra Pradesh, Assam and Manipur are the major handloom states in India. Three-fourth of handloom weaving in the country comes under these six states. Almost all handloom products in India is for domestic market. Only 1.3 percent of working looms produce for export markets. Marketing is a major constraint for the handloom sector. The middlemen play a major role in selling the cloth to the consumer. The power loom dominates textile production in India and have encroached upon the handloom sector traditional market because of lack of proper marketing. Still the appropriate marketing strategy has not been evolved as a whole by the handloom sector. In this paper, need for market assessment, problems, marketing strategy& marketing mix and suggestions for the development of handloom sector and it's market are discussed.

Dr. Veena R. Humbe[11] This paper describe that the Indian handloom products have a distinct place in the world of fabrics. It provides employment for 12 million people throughout the country and it is the second largest sector in the employment generation stands only next to agriculture. It provides direct employment to 6.5 million people in the country. Marketing is essential to boost the sale of handloom products.

Rickey Rani Boruah, Dr. Satvinder Kaur, **[9]** describe that the handloom sector is a major non-farm employer in the country. About 16 million weavers depend on this sector in the country. Handloom weaving is one of the most important nonagricultural sources of income in India.

J. P. Ramesh, K. Arumugam, M. Saravanan, M. Vignesh, M. Rajkapoor, V. Sutharsan,**[2]** This project "MECHANICAL HANDLOOM MACHINE" is for weaving the clothes by the use of mechanical energy with lesser human effort input. The main soul objective of this project is to weave the clothes in an eco-friendly manner with mark able high efficiency. By using this, we can reduce the human efforts, especially hand and foot movements.

## III. PROBLEM IDENTIFICATION

(i) When visit to different Hand Loom Industries there are two types of Loom. Hand Loom & Paddle Loom. In paddle Loom there is chances of failure of Tapping and Tapping Ball.

(ii) On Hand Loom & Paddle Loom required more manual work.

(iii) For the weaving on Hand Loom required constant manual work.

(iii)Because of constant manual work there is less productivity

## IV. SIGNIFICANCE OF SYSTEM

(i) To produce the fabric as on Hand Loom by using Solar Power.

(ii) For reducing constant work of weaver.

(iii) To increase the productivity.

(iv) To decrease the manufacturing cost of hand loom.

## V. NEED OF SYSTEM

(i) To use the modern technology as solar power to operate Hand Loom.

(ii) To reduce production time.

(iii) It can provide some relaxation to Weaver.

(iv) To make system semi-automated.

(v) To minimize the manufacturing cost of product.

## VI. FEASIBILITY NEED OF SYSTEM

(i)By using suitable mechanism it is possible to operate Hand Loom on Solar Energy.

(ii)With use of solar Energy it becomes semi-automated.

## VII. SYSTEM AIMS

(i)Use different mechanism to check the feasibility of it on Solar Energy.

(ii)Wish to change traditional mechanism to reduce friction.

## VIII. SYSTEM OBJECTIVE

(i) Analysis of existing paddle loom machine and hand loom machine.

(ii) Literature Review on the research conducted on this type of machine

(iii) Identifying critical component.

(iv) Exploring the possibility to redesign these critical component

(v) To increase the productivity of Hand Loom.

## IX. METHODOLOGY USED FO SYSTEM

(i)Study of existing Hand Loom machine.

(ii) Literature review.

(iii) Force and Energy calculation for Hand Loom.

(iv) Find out proper mechanism for Hand Loom.

(v) Design and Analysis of machines components

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