# Investigation on Raw Material Management Among Handloom Weavers in Madurai – A Way Forward

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**Abstract**

*Handloom weaving is a sustainable practice that preserves the cultural heritage by being a traditional craft. The environmentally friendly utilization of natural resources is one of the key advantages of handloom textiles. Natural fibers with a notably lower environmental impact than synthetic ones, such as cotton, silk, wool, linen, or jute, are the primary fibers that are used by handloom weavers. The government has also taken efforts to help handloom weavers procure raw material through various schemes like the Raw Material Supply scheme and has also initiated to produce raw materials needed to make Zari locally to reduce the price of purchase through Naan Mudhalvan Niral Thiruvizha, as reported in The Hindu dated February 02, 2024. A study was conducted among the Sourashtrian handloom weavers in Madurai. The survey method was adopted to collect the data from the study's respondents. Nearly 73% of respondents do not use motor-spinning wheel for efficient productivity. The interventions planned for these weavers were to provide a motor spinning wheel to increase their efficiency in productivity and to give awareness about its benefits and usage.*

*Keywords: Raw Material, Handloom weaving, Sourashtrian weavers*

## Introduction

Weaving is a traditional cottage industry in which all operations are primarily done within households, with family members engaged in the production of cloth. The Handloom industry provides a livelihood for millions of Indians, especially skilled weavers in rural areas. A handloom weaver is someone who builds and maintains a business centred around the traditional art of handloom weaving. The Sourashtrian community, which migrated from Gujarat and settled mostly in the Madurai and Tirupur region of Tamil Nadu, India, has a

distinct weaving style known as "Sourashtra weaving" or "Sourashtra pattu". They specialise in weaving beautiful silk sarees and other handloom products using intricate designs and vibrant colours. Weaving has become an integral part of the Sourashtrian culture and identity, passed down through generations. The weavers utilise a variety of materials, and working with fibers like cotton, silk, or wool, weave intricate patterns and designs. Once raw materials are received, they go through the first step of weaving, which is spinning, followed by weaving and packing the output. It's a fascinating and complex process that mainly requires skill and precision. This study focuses on the raw material management for Sourashtrian handloom weavers, underscoring the crucial role of technological advancements for these traditional artisans.

**Review of Literature**

- Narsaiah and Krishna (1999) studied the crisis in the Handloom Industry. It was identified in the study that the Handloom Industry has been facing the problem of improper financial facilities and irregular supply of yarn. As a result of this, the Weavers' Societies and corporations are not functioning well. The raw material price increases every year and the cost of the handloom cloth has increased than the power loom Cloth.
- Pratheshta.B.A. (August 2019) conducted a study on "A Study of the Present Situation of the Saurashtrian Weavers a Minority Group in India". The study found out that weaving is the traditional occupation of Saurashtrians, and people are suspending themselves from weaving because of their lesser wage and development of power loom.
- P. Flowrine Olive, K. Mahendran and S. Moghana Lavanya (December 2021) conducted a study on the topic "An Analysis of Constraints Faced by the Handloom Weavers and Weaver Cooperative Societies in Virudhunagar District of Tamil Nadu". The findings of the study are the over-dependence on government policies, the unavailability of raw materials in time and the poor quality of raw materials. The study suggests that the government can ensure the timely availability and quantity of raw materials through schemes.
- Aswani T D, Dr. Shivashankar Bhat (February 2022) conducted a study on the topic "The problems and challenges of the handloom industry". This study focuses on problems of the handloom industry in the Chendamangalam handloom unit and the production-related problems of the weavers. This study found that the reason behind the high cost of raw materials and scarcity of raw materials as the easy availability of raw materials is a persistent problem to the weavers across the state.

**Objectives of the Study**

- To understand the strategies adopted by weavers in raw materials management.
- To understand the relationship between the opinion of respondents towards the procurement of raw materials with their socio-demographic profile (need for extra raw material, number of sarees woven and basis of purchase).

**Research Methods**

Descriptive research design is followed in this study. A sample size of 30 sourastrian handloom weavers were identified based on convenient sampling technique as the population for this study is unknown. These weavers were identified based on their willingness to participate in this study. Respondents were also allowed to withdraw from the study at any point without any commitment. The age group of weavers range from 35 years to 80 years. Based on previous literature, the questionnaire was developed with dichotomous and multiple-choice questions and a Likert scale to measure weavers' opinions about raw material procurement. The interview schedule was conducted to collect the responses. Tables are used to present the data. Jamovi–Stats open-source software version 2.3.14 was used to analyse data. Descriptive statistics like mean and standard deviation were used. Normality test was conducted using skewness and kurtosis. Inferential statistics was conducted using t test.

**Hypotheses**

| S.No | Hypotheses | Statistical Testing Tool |
|---|---|---|
| $H_{o1}$ | There is no difference between the opinions of respondents regarding the procurement of raw materials among those who seek additional raw materials and those who don't seek additional raw materials | t-Test |
| $H_{o2}$ | There is no difference in the opinion of respondents regarding the procurement of raw material with the number of sarees weaved | t-Test |

**Results and Discussion**

**TABLE NO. 1: TABLE SHOWING DESCRIPTIVE ANALYSIS OF VARIABLES**

| Particulars | Opinion of Handloom Weavers towards the procurement of raw materials |
|---|---|
| N | 30 |
| Mean | 33.2 |
| Standard Deviation | 2.70 |
| Skewness | -0.00975 |
| Kurtosis | -0.987 |

The Skewness and Kurtosis value for the opinion of respondents towards the procurement of raw materials are shown in the above table. Since the result is in permissible limits ± the data is considered to be normally distributed. It is also observed based on the mean and SD of the opinion of handloom weavers towards the procurement of raw materials that 13% of the weavers barely get a diverse range of raw materials, 10% of the weavers they don't get a sufficient quantity of raw materials and 6% of the weavers say they don't get clear communication regarding the supply of raw materials.

**TABLE NO. 2: TABLE SHOWING THE BASIS OF PURCHASING RAW MATERIALS**

| Basis of raw material purchase | Number of Respondents | Percentage (in %) |
|---|---|---|
| Order based | 4 | 13 |
| Production capacity | 1 | 3 |
| Deadline receive for orders | 25 | 84 |
| **Total** | **30** | **100** |

The above table indicates that the majority of respondents 84% of weavers decide based on the deadline received for the order and this is because they rely solely on the intermediary whereas the remaining weavers either decide based on order or on production capacity

**TABLE NO. 3: TABLE SHOWING THE NEED FOR EXTRA RAW MATERIAL IN WEAVING**

| Need for extra raw material | Number of Respondents | Percentage (in %) |
|---|---|---|
| Yes | 16 | 53 |
| No | 14 | 47 |
| **Total** | **30** | **100** |

The above table indicates that 53% of weavers require extra raw materials as the occurrence of waste cannot be predicted, and sometimes the waste will lead to the requirement of extra raw materials.

**TABLE NO. 4: TABLE SHOWING THE REASONS FOR THE PROCUREMENT OF EXTRA RAW MATERIAL**

| Particulars | Number of Respondents | Percentage (in %) |
|---|---|---|
| Wastages | 7 | 44 |
| Unexpected defects due to loom | 6 | 38 |
| Design errors | 1 | 6 |
| Thread intertwining | 1 | 6 |
| Spinning error | 1 | 6 |
| **Total** | **16** | **100** |

The above diagram indicates that out of 53% of weavers who require extra raw material, 44% of weavers get extra raw materials because of wastage, 38% of weavers get extra raw materials because of unexpected defects due to loom the reason could possibly be due to poor maintenance, 6% of weavers get extra raw materials because of a design error, thread intertwining and spinning errors as handspan yarns can vary in thickness and quality.

**TABLE NO. 5: TABLE SHOWING THE SUPPLY OF EXTRA RAW MATERIAL**

| Particulars | Number of Respondents | Percentage (in %) |
|---|---|---|
| Within a day | 15 | 94 |
| Within a week | 1 | 6 |
| **Total** | **16** | **100** |

The above diagram shows that out of 53% of weavers who require extra raw material, 94% of weavers can procure raw materials within a day as the supply of raw material is predominantly through intermediatory and 6% of weavers require a minimum of a week to procure extra raw material.

**TABLE NO. 6: TABLE SHOWING THE TYPES OF SAREES WEAVED**

| Types of saree | Number of Respondents | Percentage (in %) |
|---|---|---|
| Kora cotton saree | 11 | 37 |
| Society pattu | 1 | 3 |
| Sungudi saree | 3 | 10 |
| Kodambakkam saree | 15 | 50 |
| **Total** | **30** | **100** |

The above diagram shows that 37% of weavers, weave Kora cotton saree, 3% of weavers weave society pattu, 10% of weavers weave Sungudi saree, and 50% of weavers weave Kodambakkam saree. Predominantly all sarees are based on cotton. Madurai is particularly famous for cotton sarees and is a major contributor to the export of cotton, so this could be a probable reason that these weavers focus on a variety of cotton sarees

**TABLE NO. 7: TABLE SHOWING THE QUANTITY OF SAREES WEAVED IN A MONTH**

| Particulars | Number of sarees | Number of Respondents | Percentage (in %) |
|---|---|---|---|
| Kora cotton saree | Less than 10 sarees | 5 | 17 |
| | 10 and more than 10 sarees | 6 | 20 |
| Society pattu | Less than 10 sarees | 1 | 3 |
| | 10 and more than 10 sarees | 1 | 3 |
| Sungudi saree | Less than 10 sarees | 0 | 0 |
| | 10 and more than 10 sarees | 2 | 7 |
| Kodambakkam saree | Less than 10 sarees | 7 | 23 |
| | 10 and more than 10 sarees | 8 | 27 |
| **Total** | | **30** | **100** |

The above table shows that 17% of weavers, weave less than 10 Kora cotton sarees in a month, 20% of respondents weave 10 and more than 10 kora cotton sarees in a month, 3% of weavers, weave less than 10 society pattu, 3% of weavers, weave society pattu less 10 and more than 10 sarees in a month, 7% of the weavers, weave sungudi saree 10 and more than 10 sarees in a month, 23% of weavers, weave less than 10 Kodambakkam sarees in a month, 27% of weavers weave 10 and more than 10 Kodambakkam sarees in a month.

**TABLE NO. 8: TABLE SHOWING THE BASIS OF DECIDING THE WEAVING SCHEDULE**

| Particulars | Agent | |
|---|---|---|
| | Number of Respondents | Percentage (in %) |
| Intermediatory demand | 2 | 7 |
| Complexity of the design | 2 | 7 |
| Work life balance | 26 | 86 |
| **Total** | **30** | **100** |

The above diagram shows that 86% of weavers decide on their weaving task depending on their work-life balance. Since weaving is primarily done in households, it requires a state of balance to maintain both the family and the weaving and 13% of respondents based on intermediatory demand and complexity of design.

**TABLE NO. 9: TABLE SHOWING WEAVERS USING MOTOR SPINNING WHEEL**

| Particulars | Number of Respondents | Percentage (in %) |
|---|---|---|
| Yes | 8 | 27 |
| No | 22 | 73 |
| **Total** | **30** | **100** |

The above diagram shows that 27% of weavers are using the motor-spinning wheel while 73% of respondents are not using the motor-spinning wheel, probably their awareness level is low and they believe that the cost is high.

**Hypotheses Testing**

$H_{01}$: There is no difference between the opinion of respondents regarding the procurement of raw material among those who seek additional raw materials and those who don't seek additional raw materials

**TABLE NO. 10: T - TEST SHOWING THE OPINION OF RESPONDENTS REGARDING THE PROCUREMENT OF RAW MATERIAL AMONG THOSE WHO SEEK ADDITIONAL RAW MATERIAL AND THOSE WHO DON'T SEEK ADDITIONAL RAW MATERIALS**

| Seeking extra raw materials | N | MEAN | SD | t value | p value |
|---|---|---|---|---|---|
| Yes | 16 | 32.8 | 2.72 | -0.899 | 0.376 |
| No | 14 | 33.6 | 2.71 | | |

The above table shows the independent sample t-test conducted to show the opinion of respondents regarding the procurement of raw materials among those who seek additional raw

materials and those who don't seek additional raw materials. There is no significant difference between the weavers those who seek additional raw materials (M = 32.8, SD = 2.72) and those who don't seek additional raw materials (M = 33.6, SD = 2.71) with t = -0.899 and p = 0.376. Hence the hypothesis is accepted.

$H_{02}$: There is no difference in the opinion of respondents regarding the procurement of raw material with the number of sarees weaved

**TABLE NO. 11: T – TEST SHOWING THE OPINION OF RESPONDENTS TOWARDS RAW MATERIAL PROCUREMENT WITH THE NUMBER OF SAREES WEAVED**

| Number of sarees weaved | N | MEAN | SD | t value | p value |
|---|---|---|---|---|---|
| Below 10 | 17 | 33.7 | 2.59 | 1.26 | 0.218 |
| Above 10 | 13 | 32.5 | 2.79 | | |

The above table shows the independent sample t-test conducted to show the opinions of respondents towards the procurement of raw materials with the number of sarees weaved. There is no significant difference in the score for weaving 10 and below 10 sarees (M = 33.7, SD = 2.59) and for weaving above 10 sarees (M = 32.5, SD = 2.79), with t = 1.26 and p = 0.218. Hence the hypothesis is accepted.

**Suggestions**

1. The weavers can optimize their inventory levels by implementing the Economic Order Quantity method. As it has been observed that 53% of the weavers require more raw materials than they are initially provided with, EOQ can be used to analyze the past five years of procurement and production patterns to determine the ideal quantity of raw materials required. By doing so, the weavers can order materials in appropriate batches that ensure they have adequate stock while minimizing excess inventories to avoid stockouts.
2. 44% of weavers receive extra raw materials due to wastage. They can be educated on waste management techniques, such as reusing fabric scraps and yarns and precise cutting styles to avoid waste.
3. It has been observed that 38% of weavers receive extra raw materials due to unexpected defects in their loom. To avoid such defects, weavers should regularly inspect their looms for signs of

damage or loose parts. It is also important to keep the loom well-lubricated to prevent friction and follow a schedule for proper maintenance and replacement. By taking these measures, weavers can prevent loom defects and significantly reduce raw material wastage.

4. Many weavers tend to decide the amount of raw material they purchase based on the deadline they receive for the order, rather than considering their actual production capacity. This approach may lead to a misunderstanding of their production capacity. They might be capable of producing even more, but if they stick to the deadline thinking that they can't produce, they might incur an opportunity cost. Therefore, it's important to inform weavers about the potential risks of this approach.

**Outcome of the Study**

73% of the weavers do not use motor spinning wheels. These weavers face occupational hazards like pain in their shoulders and hands. Hence, researchers attempted to orient these weavers explaining the advantages and application of the use of the motor spinning wheel at the same time retaining authentic traditional handloom weaving. Two weavers were convinced and purchased motor-spinning wheels to make their lives easier

**Conclusion**

Handloom weavers form a vibrant community in Tamil Nadu that significantly contributes to the state's rich textile heritage. These weaving traditions are rich in Kanchipuram, Madurai, Coimbatore and Tirupur which is recognized for both its intricate handloom and power loom traditions. This research delves into raw material management intending to advance productivity within the weaving industry. It seeks to uncover measures that can be implemented to optimize productivity levels. Effective raw material management is crucial for the sustainable growth of handloom weavers. This study emphasizes the importance of raw material management to Handloom weavers. This study reveals that the majority of the weavers are not aware of the motor spinning wheel which has resulted in low productivity and hand pain problems. Researchers also helped them to buy a motor spinning wheel and also trained the weavers how to use it, which will result in increased productivity. The authors extend their gratitude to all those who were part of this study.

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## Author Biographies

**Shifana J** is a dedicated MBA fresher specializing in Finance and Marketing, with a strong GPA of 9.2 and proven leadership skills through key roles in academics and events. Through internships at StartupTN Madurai Regional Hub and Trioangle Technologies, she gained hands-on experience in startup ecosystem support, HR operations, recruitment processes, and analytical decision-making.

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**Kajal J. Mehta** is a distinguished Associate Professor with over 21 years of rich teaching experience, complemented by valuable corporate exposure as an HR Executive at Tata Consultancy Services (TCS). She is widely recognized for her ability to integrate real-world industry insights into academic practice, creating a dynamic learning environment that bridges theory and application. Her research interests and academic engagements reflect a strong focus on data-driven decision-making. Her unwavering commitment lies in nurturing the next generation of industry leaders through a blend of practical knowledge, research excellence, and digital proficiency.