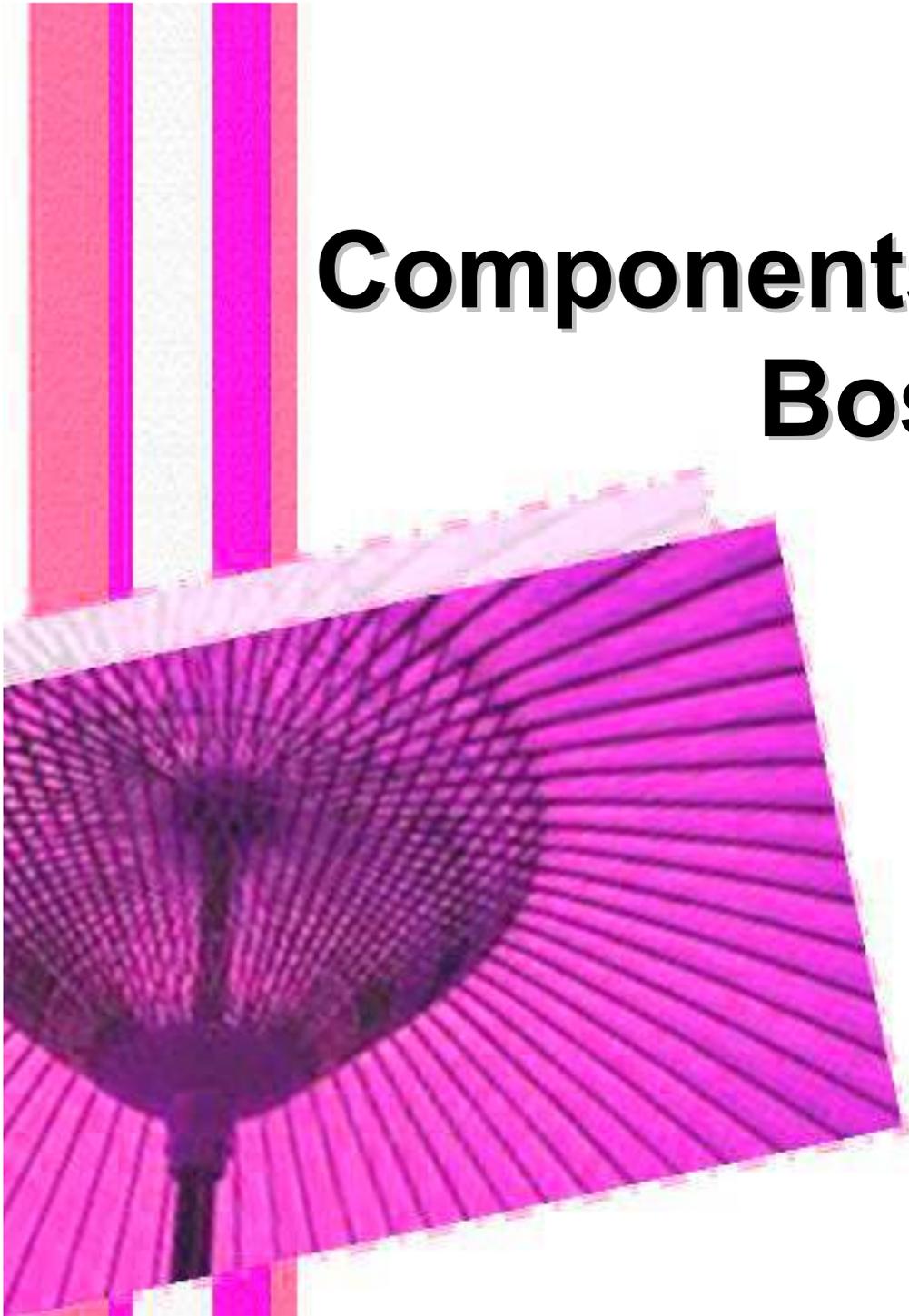


# Production Analysis

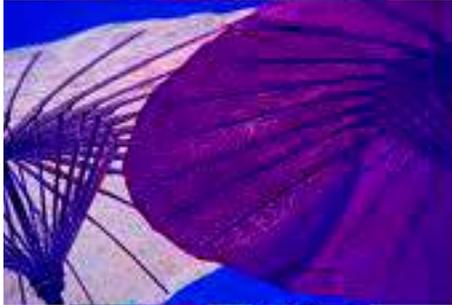
*Umbrella Making Center 1978 Co., Ltd.  
Chiang Mai, Thailand*

*Boonchai Niponwattanakul  
478 57726 29*

# **Components & Materials of Bosang Umbrellas**

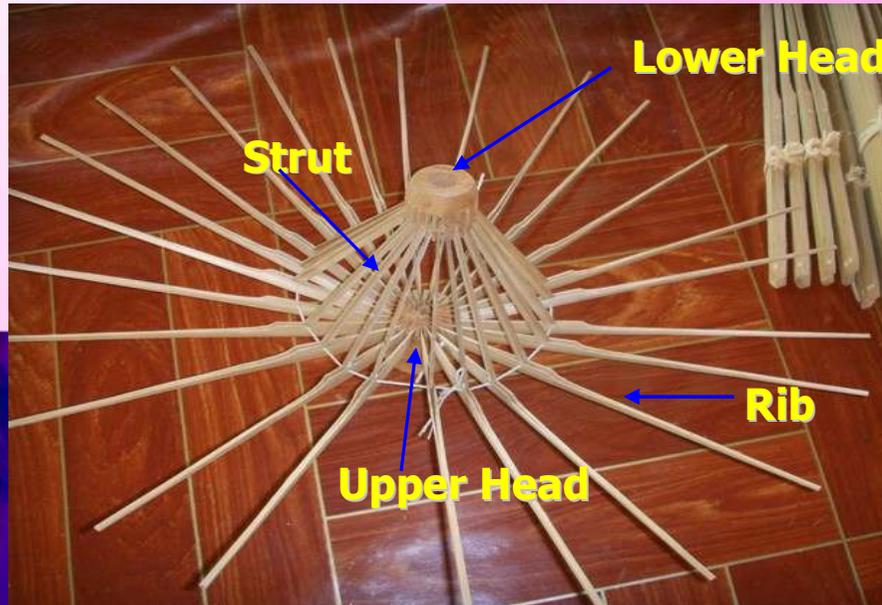
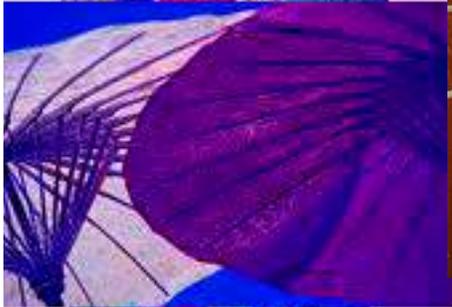


# Components & Materials of Bosang Umbrellas



Component	Material Used
1. Upper and Lower Heads	Soft wood such as Kraton, Mokeman
2. Rib and Strut	Bamboo
3. Umbrella Handle	Soft wood for small sizes Bamboo for large sizes
4. Covering Material	Sa paper

# Components & Materials of Bosang Umbrellas

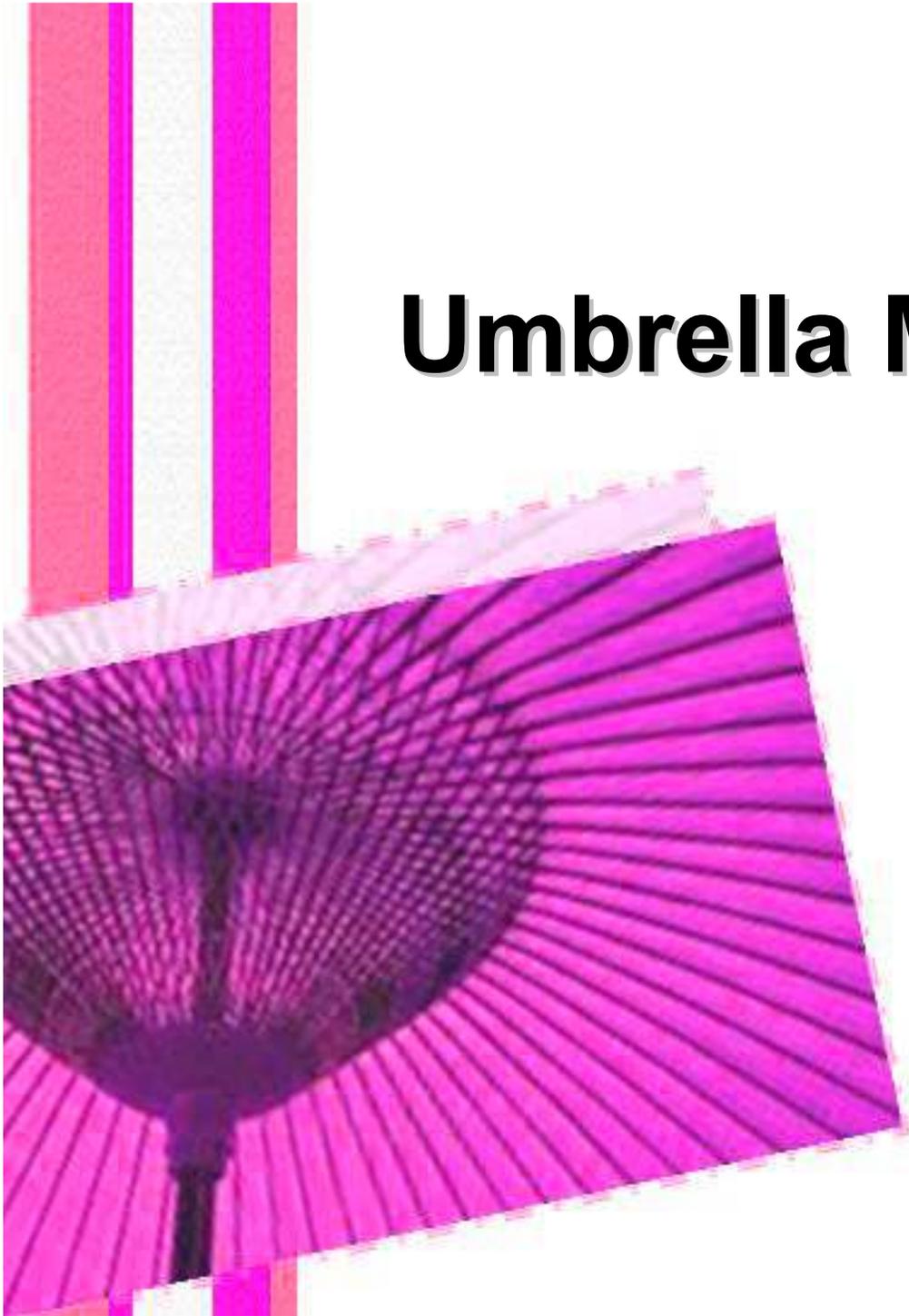


Sa Paper

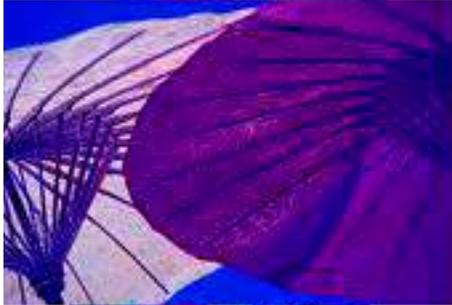
Umbrella Frame Component



# **Umbrella Making Process**



# Umbrella Making Process



**Upper and Lower Heads Making**

**Rib and Strut Making**

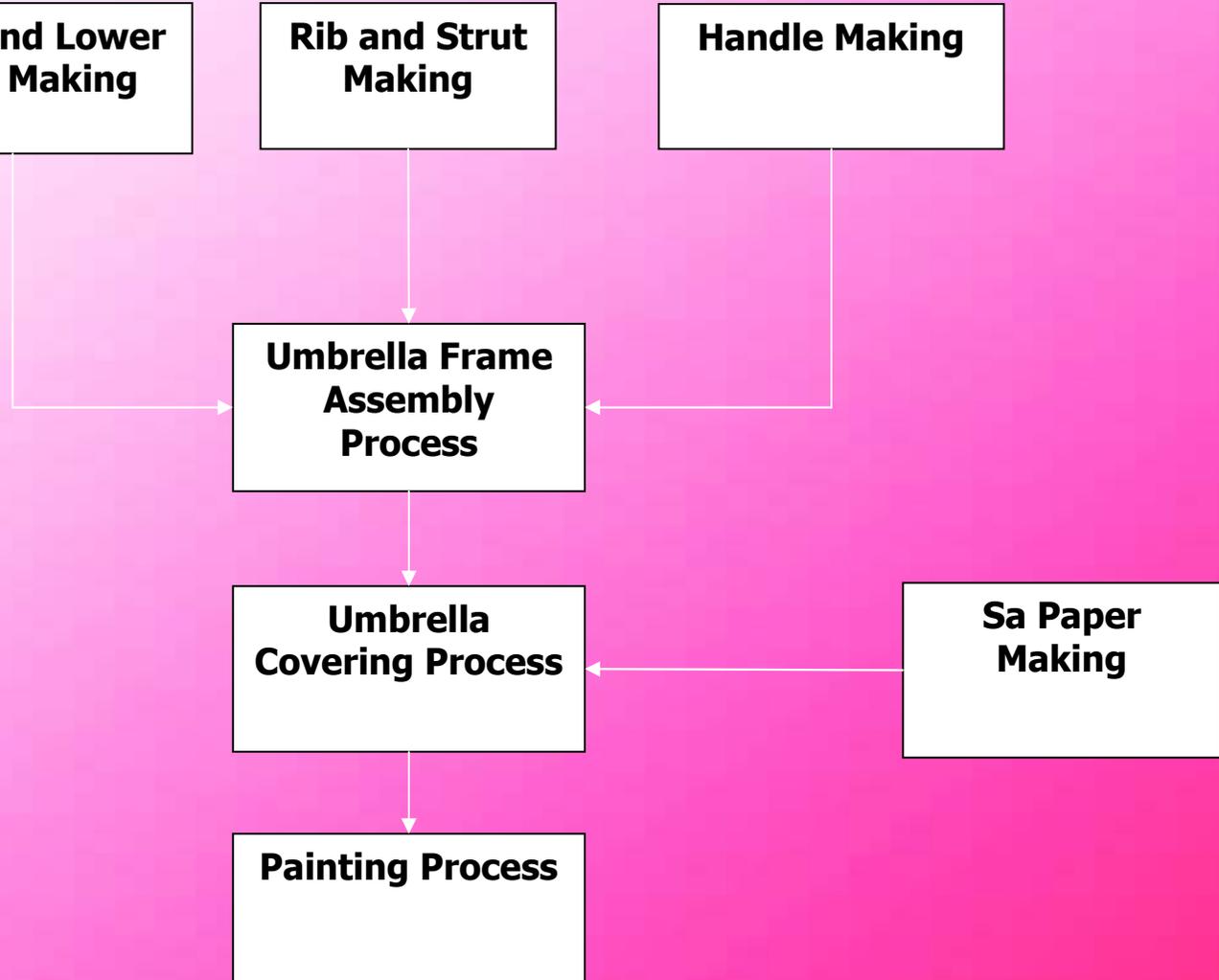
**Handle Making**

**Umbrella Frame Assembly Process**

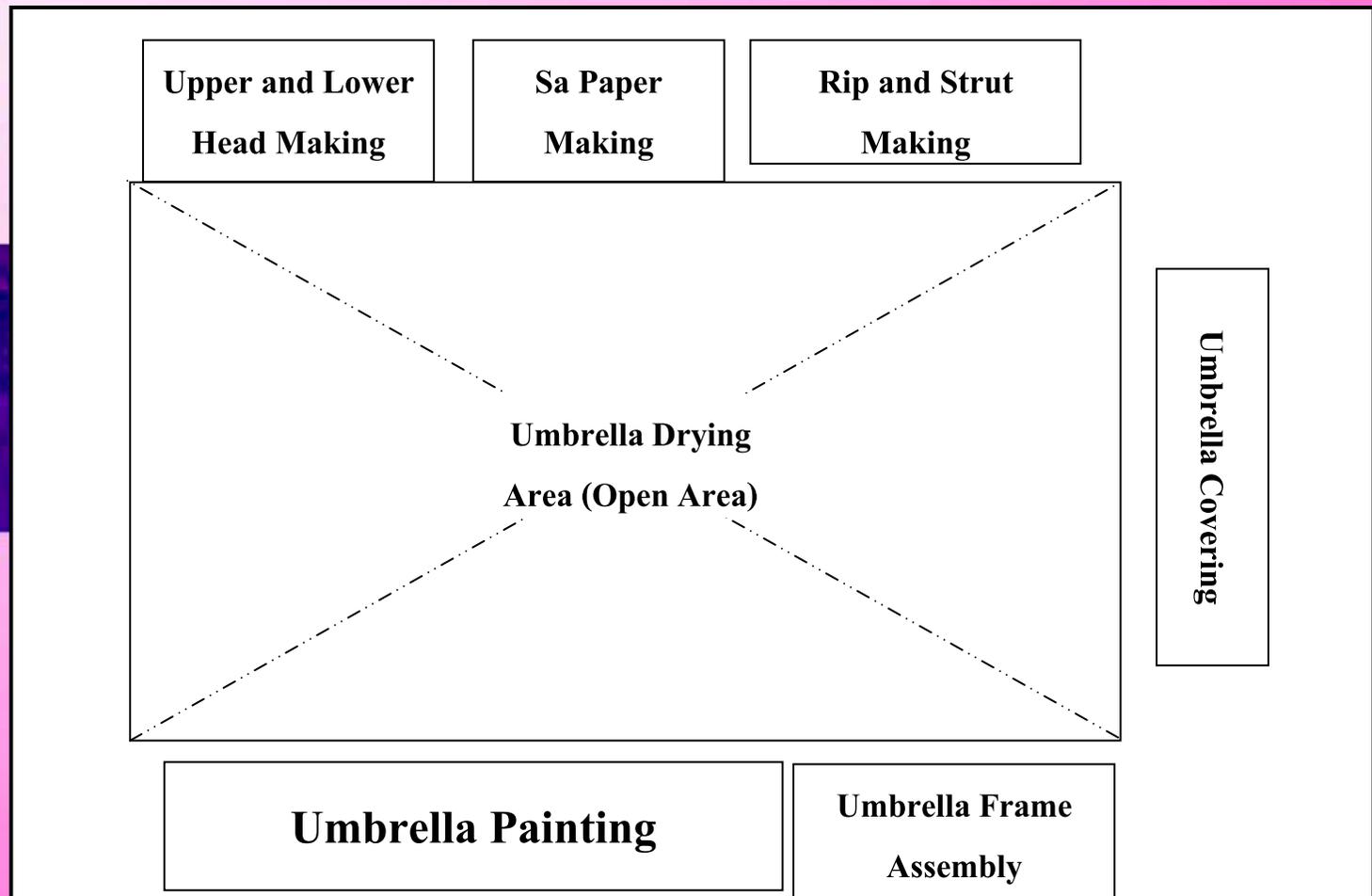
**Umbrella Covering Process**

**Sa Paper Making**

**Painting Process**



# Production Layout of Umbrella Making Center





# Umbrella Making Process

## 1. Upper and Lower Head Making



- Stick of Kraton wood is shaped into upper and lower heads using ancient lathe machine



# Umbrella Making Process



## 2. Sa Paper Making



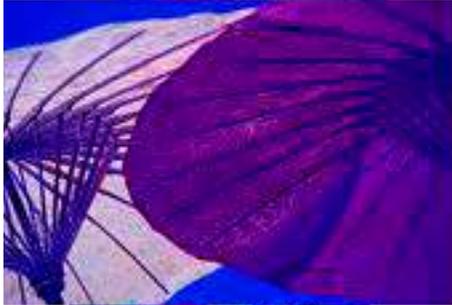
- Mostly Sa paper is purchased from neighboring villages.
- Sa paper making is demonstrated for tourism purpose.



# Umbrella Making Process

## 3. Rib and Strut Making

- Bamboo of at least 2 years is used.
- Use a knife to make ribs and struts by hand.



# Umbrella Making Process

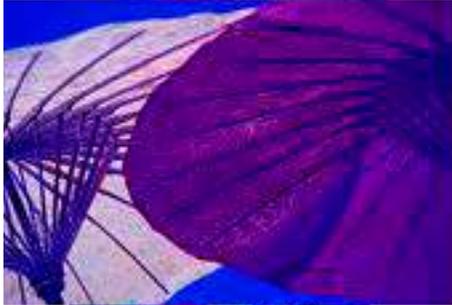
## 4. Umbrella Frame Assembly

- Upper and lower heads, ribs and struts are assembled together with a tough string.



# Umbrella Making Process

## 5. Umbrella Covering Process

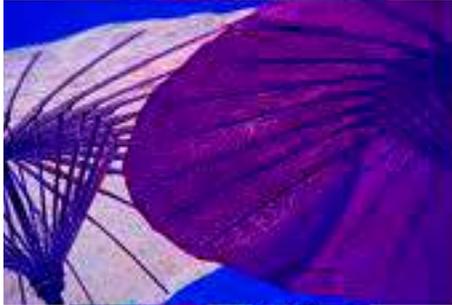


- Apply a special adhesive substance made from a mixture of paste and persimmon secretion on to the umbrella frame

- Cover the umbrella frame with Sa paper and expose it to the sun

# Umbrella Making Process

## 6. Painting Process

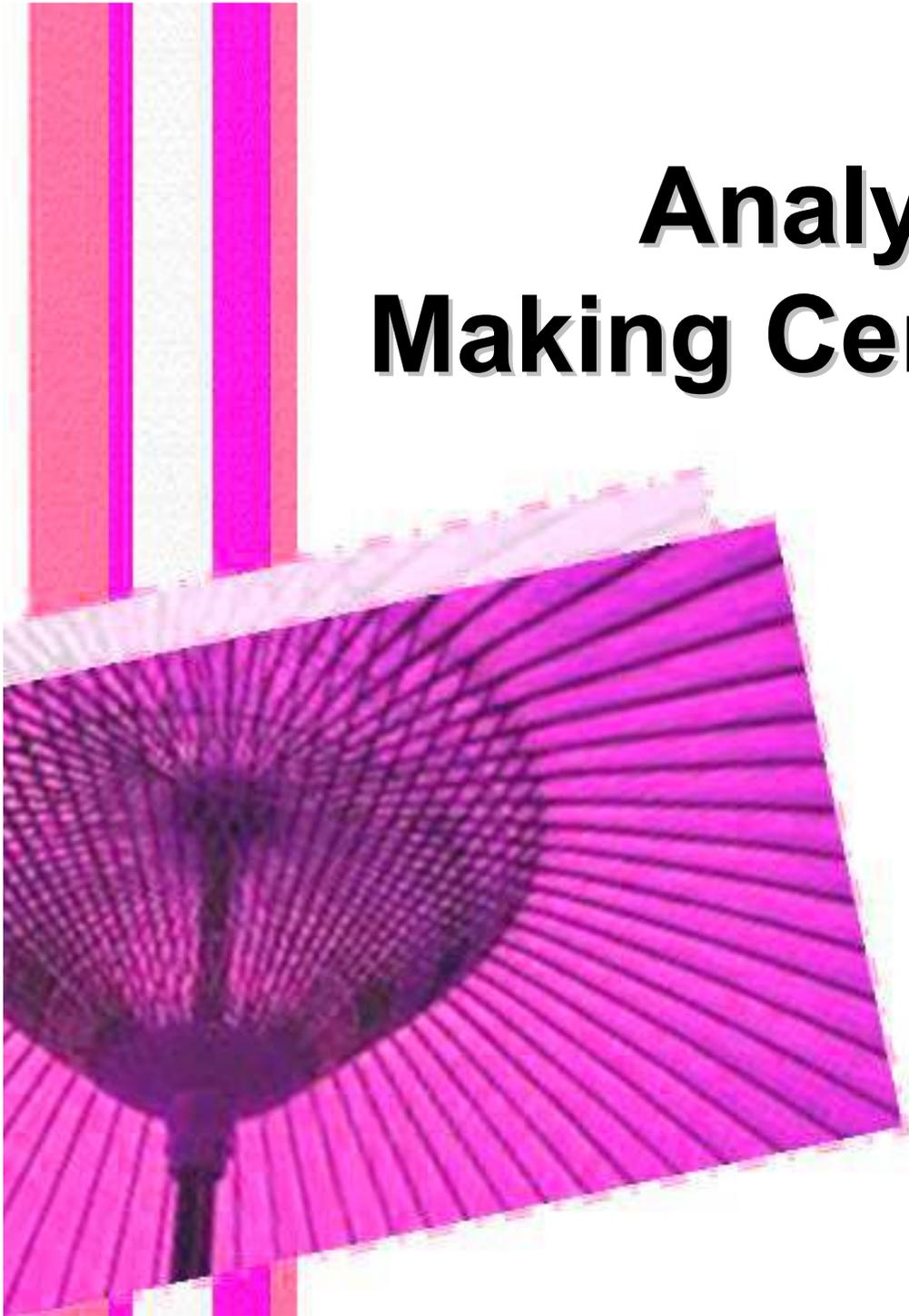


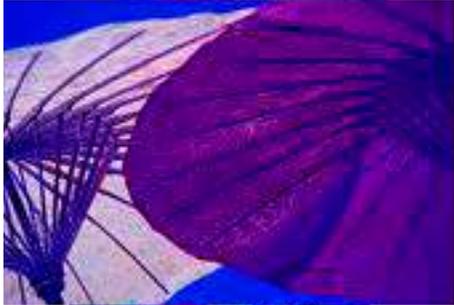
- Mostly, use water paint or oil paint

- Scenery view, animals such as birds, dragon are painted by hands.

- Require high skills and experiences

# **Analysis of Umbrella Making Center Production Process**





# **Analysis of Production Process**

## **Capacity**

- In the year 2005, UMC produced, on average, 4,500 umbrellas of various sizes per month
- Management estimates the real capacity to be somewhere between 6,000 - 7,000 units per month.



# Analysis of Production Process

## Productivity

For Umbrella Making Center

Productivity = Umbrella Output / Man Hour

Umbrella Output = 150 Unit / Day

Man Hour = 70 (workers) x 8 (Hour/Day/Worker)  
= 560 Hour/Day

Productivity = 150 / 560 = 0.27 Unit/Hour

# Analysis of Production Process

## Inventory Management

1. Raw Material

Bamboo, Sa Paper, Softwood etc.

2. Work-In-Process Inventory (WIP)

Components of umbrella frame.

3. Finished Goods Inventory

Finished umbrella





# Analysis of Production Process

## Inventory Management

Type

Level of Inventory

1. Raw Material

Low , because most raw material are available locally.

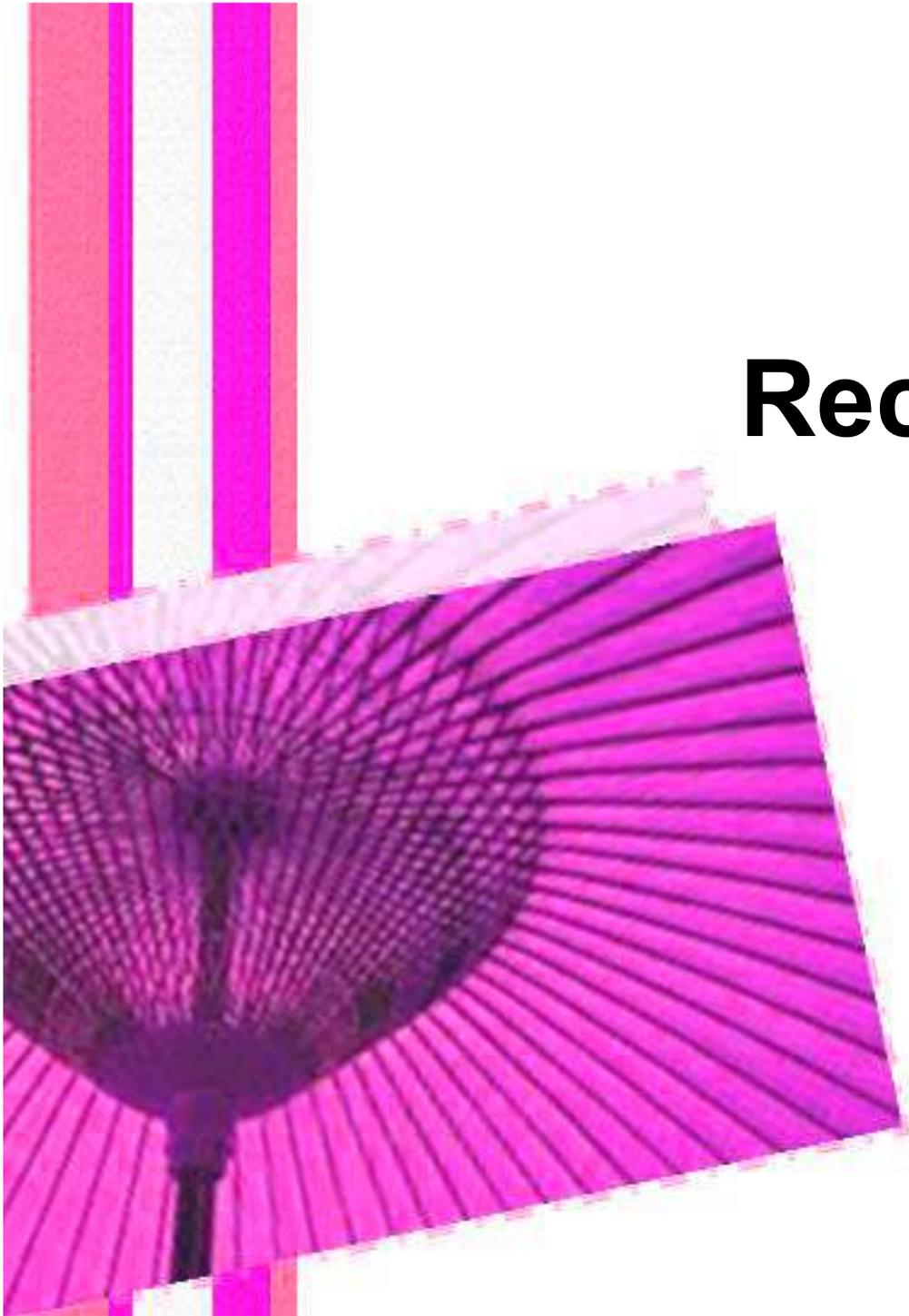
2. Work-In-Process Inventory (WIP)

Low, because task time of each process is quite short.

3. Finished Goods Inventory

Low, because of made-to-order approach

# Conclusions & Recommendations



# Conclusions & Recommendations

UMC still preserves the traditional method for making umbrellas and use local materials

- Reorganize production process layout to reduce unnecessary motion
- Provide Standard Operation for each process
- Arrange production plan to meet seasonal demand

