

Floral Dyeing from Floral Waste: An Organic Approach to Entrepreneurship

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ABSTRACT India's unique feature is its integrity. India houses seven registered religions from which six of the religions viz. Muslims (14.2%), Christians (2.3%), Sikhs (1.7%), Jains (0.4%), Buddhists (0.7%) and Zoroastrians (not counted) have been awarded 'National Minority' status. Hindus being the maximum i.e. 79.8%. Around 1.37% billion belongs to different religions further divided into various paths of worships. Flowers being an inseparable part of almost every religion in India, it is found that almost thousands of tons of flowers are either used as an offering to God or for decorations on different religious occasions and events. Flowers offered are not disposed scientifically. As per the religious belief, these floral offerings are considered to be sacred and therefore are majorly discarded in the water bodies like rivers, lakes etc. This is one of the reasons for water pollution. Pune is considered as the cultural capital of the Indian State of Maharashtra and is also the second largest city in the state after Mumbai with the population of 6.45 million. As per the record, maximum population in Pune follows Hinduism followed by other religious communities viz. Islam, Sikh, Jain, Christian etc. Pune houses Hindu Temples, Dargahs, Jain Temples, Churches, Gurudwaras etc. Although the rituals differ with every religion, there is still one common factor present and that is the usage of flowers. The purpose of this research is to come up with a business model to help transform the floral waste from the religious places into successful businesses of floral dyeing and provide the entrepreneurial opportunity to the society as well as environmental sustainability. The scope of this research is limited to six Hindu temples, two Jain temples, two Dargahs, two churches and two Gurudwaras in Pune. The researchers have collected the primary data through structured questionnaires and interviews. The secondary data was collected from various reports, journals, books, etc. The sample size of the research study is 350 consisting of various respondents such as priests, trustees of the place, workers, devotees, cleaning officers, concerned representatives of local municipal authority and residents of nearby area to these religious places. The data collected was analyzed with the help of ANOVA. The researchers came up with the business model wherein the floral waste from the religious places is collected, processed to give floral color imprints on the textile and introduced it to the stakeholders. The researchers feel that the business model introduced has potential to expand in the market.

I. INTRODUCTION

According to latest reports of demographics, India is the second most populous country in the world. Being home to a variety of religions, India witnesses various rituals and customs on a regular basis. Although the rituals and customs vary with every religion, there still exists a common factor viz. Flowers. Flowers play a significant role

in every religion. India has a floriculture background from the ancient days. India stands on the second position in the flower production. Flowers are being used for decorations as well as for offerings. These flowers after their respective usage end up as floral waste. As per the religious belief, the floral offerings are considered to be sacred and therefore people used to discard these floral offerings in the water

bodies. But this resulted into the problem of water pollution. People now, are aware about the fact that maintaining the environmental balance is also of utmost importance. Keeping this in mind, now-a-days, people have started composting the floral waste generated through religious activities. Although composting is a good option to discard the floral waste, reusing the flowers can also be given a thought about. Flowers can be reused in multiple ways. Extracting the color pigments from the flowers for dyeing purpose is one of the eco-friendly uses. People are becoming aware about the hazardous effects of the synthetic dyes. Dyeing the textile with floral color pigments is the new age dyeing. Researchers intend to showcase this eco-friendly dyeing option as an entrepreneurial venture. This study will focus on providing a business model of the eco floral dyeing and printing to the society.

Floral Dyeing means extracting the color pigments from the flower petals by undergoing various processes and then using those dyes for fabrics. On the other hand, floral printing means arranging the flowers and/or flower petals on a fabric or paper and processing them to have floral color imprints. In the era of eco-friendly goods, these floral dyed and/or imprinted fabrics and/or papers will be a day-to-day option. Now-a-days the fashion industry is also having floral pattern options. With this view, researchers plan to introduce floral dyeing/printing as an entrepreneurial venture to the society. The researchers aim to focus on the floral waste generated through the religious places for this floral dyeing/printing. Pune – a city in Maharashtra, India, is developing at a rapid pace. Pune is considered as the cultural hub of state of Maharashtra. This city homes a total population of 6.4 million which includes a variety of religion communities¹. As a result Pune witnesses various festivals throughout the year. As stated earlier, flowers are being used by the religious communities for variety of purposes. Flowers play a vital role at many religious places.

II. STATEMENT OF PROBLEM

India – home to a variety of religions, witnesses various rituals every other day. Every religion follows different sets of rituals for worshipping god, marriages, funerals, etc. Although these rituals vary with every religion, something is still common for all the rituals. That something is nothing but the use of flowers. More or less in quantity but every religion uses flowers either for religious purpose or for decoration. In India, every year approximately eight hundred million tons of floral waste is deposited from the religious places.² This waste creates a major environmental problem. Pune being the cultural city of the Indian state of Maharashtra, homes various religious communities. Although the awareness

regarding the proper disposal of waste is increasing among the population, there still exists a problem of floral waste management. Researchers carried out a pilot survey and found that the majority of the floral waste is mixed with the wet waste. There is no segregation of flowers from the wet waste. Most of the religious places give away the floral waste to the Municipal Authorities. Researchers, through this study want to suggest ways for the segregation of the floral waste from the wet waste in the religious communities. Studies have been conducted to extract color pigments from the flowers and using them for fabric dyeing. Despite of these studies, the flowers are still being discarded either in water bodies as they have religious value or given away to the municipal authorities. This results in the wastage of color pigments in the flowers. This research focuses on developing a business model of floral dyeing/printing for small scale industry. This will be environment friendly venture and help reduce hazardous effects of synthetic dyes. Creation of venture will also generate employment. The business model will provide entrepreneurship option to the society. This will reduce the problem of unemployment.

III. PURPOSE OF THE STUDY

As we move towards the Globalization, development becomes an inseparable part of the society. Development leads to prosperity. This changes the overall lifestyle of people. Although all these things are positive, there still exists a gap. In the light of development we tend to forget the environment. Environmental issues are the major concern for the society which leads to hazardous effects. This study focuses on one such environmental issue of waste management. In a country like India, traditions and customs play a major role in the society. Flowers are used in many rituals on a daily basis right from weddings, offerings to God to funerals. On an average, India has a floral waste of approximately two million tons after religious rituals. This waste if treated properly can be used in composting. Awareness about the reuse of solid waste material for composting purposes is increasing these days. Many religious places are having their own composting plants. This is a positive sign. The researchers, through this study, want to introduce the technique of total use of this floral waste to the society. If the flowers are used in composting, the color pigments from the flowers are wasted. Instead, if we extract the color pigments from the flowers and then do the composting, the flowers can be more useful. The color pigments from the flowers can be used for the preparation of natural dyes. Dyeing the fabric/ paper or floral imprinting the fabric/ paper can be an entrepreneurial venture. The researchers desire to introduce a business model for floral dyeing or imprinting to the society. This entrepreneurial venture will help to generate employment. The purpose of this research study is to search ways to protect the environment, to maintain environmental sustainability and to

¹ <http://worldpopulationreview.com/world-cities/pune-population/>

² <https://www.fastcompany.com/40431423/these-indian-entrepreneurs-upcycle-leftover-religious-flowers-into-useful-products>

come up with the business model that will help in economic development of the society.

IV. RELATION OF FLOWERS AND RELIGION

A. FLOWERS AND CHRISTIANITY

White roses or lilies are considered to be sacred in Christianity. They are often considered as a symbol of purity and peace. Red roses have another level of significance in this religion. Red roses are the symbol of love. People also think about the red roses as a sign of Christ's blood. Church altars are decorated with flowers on the special occasions. In India, there are decorations mostly on weekends at the time of prayers. Many a times these decorations are with flowers. Apart from the religious use, Christian weddings and funerals also demonstrate the use of flowers.

B. FLOWERS AND HINDUISM

Flowers play a key role in Hinduism. The worship ritual named "Puja" is also known as "the Flower Act". Lotus is considered as the sacred flower in Hindu religion. Similarly many other flowers are considered to be important in other holy scripts. In Hinduism, some specific flowers correspond to specific god or occasion. Temples have daily floral offerings to the God. In addition to this, many Hindu festivals, weddings and funerals have floral use on a large scale.

C. FLOWERS AND ISLAM

This religion does not have that much of religious use of flowers. There are floral net offerings in Dargahs. Flowers are being used in marriages and funerals. In the use of flowers, red roses are used to prepare perfumes. Rose water also has importance in Islam. 4

D. FLOWERS AND SIKHISM

Flowers are used in Gurudwaras for decoration of the holy book. Marigold flowers are used for the decoration purpose. Along with this use, flowers are an inseparable part of weddings and funerals. Apart from marigold flowers, Sikh people also use roses and jasmine. If a person does not have money or food to offer, he may simply offer flowers.

E. FLOWERS AND JAINISM

Eightfold puja or eightfold offering ceremony in Svetambara Jain Temples has the use of flowers. Worshippers offer flowers as a part of rituals performed. Flowers are one of the eight offerings from the ceremony. According to one belief from Jainism, plucking of flowers is not considered good. In some of the temples Jain people only offer flower petals to their God. The amount of flowers used for religious purposes is not on large scale in Jainism.

V. REVIEW OF LITERATURE

A. FLORAL DYEING

Akhila Nair, Aparna Kelkar (April, 2018) in their research study titled "Extraction of Natural Dyes from Waste Flowers

of Aster and studying its potential application as pH indicator" write that the extract from the waste aster flowers is a good alternative to the synthetic dyes. The study was aimed at extracting natural dye from the waste aster flowers.³

Dhriti Gandhi Ranjan (September, 2017) writes in an article about Renu Gupta who is a designer and specializes in eco- printing. According to Renu Gupta, eco-printing is all about experimenting with natural pigments present in flowers and other parts of plants. She says that sometimes these pigments give shadowy effect and the other times defined one. The designer states that various factors affect the colour impression on the fabric and no two pieces are similar.⁴

Nisha Jain (March, 2017) in her research study "Extraction and Application of Natural Dye by utilizing Temple Floral Waste *Tegets Erecta L. (Mexican Marigold)*" states that the natural dye extracted from the marigold temple waste can be used for coloration in textile industry. Further, the author concludes the research work by affirming that this natural dye has no side effects on skin and is organic in nature and hence, it is safe for the environment as well.⁵

M. S. Waghmode (November, 2016) in the research article "Management of Floral waste by Conversion of Value-added Products and their other applications" reveals that flowers are being used in many of the cities in the country. The author also stresses that there is hardly any proper floral waste management report available and hence, managing the floral waste becomes more important. The study states that countries like India and Shri Lanka, dump 40% of the floral waste on the landfills. The author introduces the modern approach to the waste management through various add-on products such as Biofuels, Organic Acids, Compost, Dyes etc. The study also gives detailed information regarding the preparation of various products from the floral waste with procedure. The author thinks that creation of value-added products from floral waste will reduce the problem of water and environmental pollution.⁶

Dhairyasheel Patil (August, 2016) in the research paper "Extraction of Natural Dye from Rose flower for Dyeing Cotton Fabrics" focus on rose flower for extraction of colour pigments. The author used four mordents to test the shades of the colour pigments. Author reveals that different mordents

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http://www.jipbs.com/VolumeArticles/FullTextPDF/412_JIPBSV5I401.pdf

4 <https://www.theweek.in/webworld/features/society/The-art-of-printing-flowers-leaves-on-fabrics.html#>

5

http://www.ijetsr.com/images/short_pdf/1491477821_nisha_ijetsr.pdf

6 <https://link.springer.com/article/10.1007/s12649-016-9763-2>

TABLE I
NO. OF RESPONDENTS

Religious Place	No. of Places	No. of Respondents (No. of place*10)
Temple	6	60
Church	2	20
Dargah	2	20
Jain Temple	2	20
Gurudwara	2	20
Total	14	140

- To assess the acceptance level of the society about the business model

IX. HYPOTHESIS

H_0 : There is no significant difference between the acceptance levels for the floral dyeing business model despite of the difference in the religion.

H_1 : There is a significant difference between the acceptance levels for the floral dyeing business model despite of the difference in the religion.

X. RESEARCH METHODS

For this research, researchers decided to use questionnaire and interview tools to collect the data. Questionnaires were distributed among devotees of selected religious places. The researchers selected the religious places according to the demographic distribution of the religions in Pune. Researchers also used interviewing as a complimentary method to interview other set of respondents. Questionnaires were chosen to collect the information in a systematic manner and more quickly. The researchers could collect the information from multiple respondents in a timely manner. In order to collect supporting information necessary for the research, researchers chose interview method. The interviews were structured and the questions of the same were distributed among the representatives of each participant groups.

Researchers had also planned to use observation method as a part of data collection strategy. But due to time and feasibility constraints, this method could not be opted for.

XI. SAMPLING STRATEGY AND DATA COLLECTION

For this study, data was collected from variety of respondents. Structured questionnaires were distributed among the devotees of the religious places. This study was focused with five religions viz., Hindu, Muslim, Sikh, Jain and Christian. A total of fourteen religious places were selected for this research study. Related information was collected from devotees, person performing religious duties, trustees of the religious place, cleaning officers, workers, Corporation personnel, NGO personnel and residents of nearby area. The total of three hundred and fifty respondents were approached to collect the data.

TABLE II
LEVEL OF ACCEPTANCE

ANOVA					
Acceptance Level					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	61.35	4	15.338	8.889	0.000
Within Groups	232.93	135	1.725	-	-
Total	294.28	139	-	-	-

One hundred and forty respondents were given structured questionnaires and data was collected. Apart from these respondents, there was other set of respondents who were approached for data collection. Interview method was implemented to collect data from these respondents.

XII. METHOD OF DATA ANALYSIS

This research is a combination of quantitative and qualitative research. The questionnaire results were quantified and analysis was done through SPSS. Researchers opted for ANOVA to analyse the data as there were more than two groups of religion for the testing. The qualitative data collected through interviews was analysed with the help of thematic analysis. The results of the questionnaire analysis were presented through charts and tables.

The data collected is analyzed using one way ANOVA. This graph indicates the acceptance level of the respondents for the floral dyeing business model. The researchers raised following questions to the devotees of five religious communities.

- Which religion do you follow?
- Do you Visit Religious Places? How frequently?
- Will you be interested to receive the floral imprints of the flowers used at religious places? Rate your acceptance on a scale of 5.

The acceptance level for the floral dyeing business model

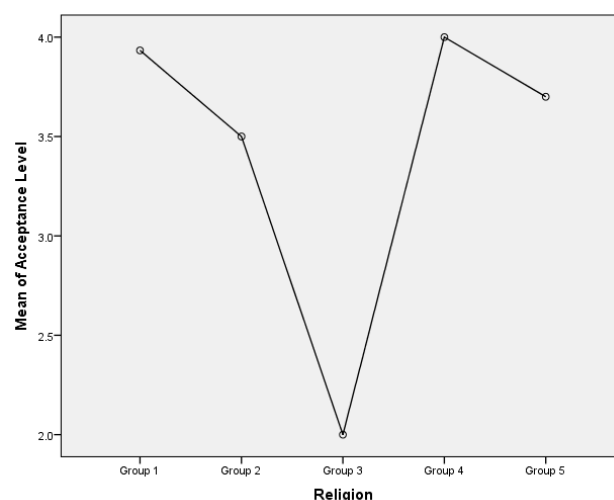


FIGURE 1. Level of acceptance

differ with the religious community. There exists a difference in the acceptance level within the religious group. Researchers found that group two of the respondents was reluctant to use the religious floral waste for floral dyeing/imprinting.

The qualitative data collected through interviews and observations is analyzed using thematic analysis. Questions raised to the respondents and the researchers received responses. The responses are as follows:

A. WHAT IS THE USE OF FLOWERS AT THE RELIGIOUS PLACES?

Respondent A: Flowers are used as an offering to God. I offer flowers every day.

Respondent B: Flowers offered to god have emotional value. We don't throw these flowers if we receive them back.

Respondent C: We treat the floral offerings as a blessing from god. These floral offerings are sacred.

Codes derived from the responses: Flowers for Offering, Religious belief of devotees, Blessing from God, Flowers have emotional value.

Theme derived from the codes above is Use of Flowers.

B. WHAT HAPPENS TO THE RELIGIOUS FLORAL WASTE?

Respondent A: Floral waste is collected separately and we use that waste for composting purpose. We have a composting plant.

Respondent B: I have seen people throwing the floral offerings in the river body. This causes water pollution.

Respondent C: Majorly the floral waste is mixed with the solid waste and municipal authorities collect this waste.

Codes derived from the responses: Government bodies, Water Pollution, Composting.

Theme derived from the codes above is Floral Waste Management.

C. WHAT DO YOU THINK ABOUT FLORAL DYEING?

Respondent A: What is Floral Dyeing?

Respondent B: Flowers can be reused through floral dyeing. It is environment friendly.

Respondent C: floral waste can be reduced. We are willing to try this model at our religious place.

Codes derived from the responses: Unknown process, Environment Friendly, Reuse of Flowers, Floral Waste reduction, willingness.

Theme derived from the codes above is Perception of floral dyeing.

XIII. CONCLUSION

Floral Dyeing is a relatively new concept for the Indian community. Although initiatives for waste management are in process, the area of floral waste management is at primary level. Few religious places are using composting technique, but systematic disposal system has to long way. There is

TABLE III
LEAN BUSINESS PLAN FOR FLORAL DYEING/IMPRINTING

Idea	
To provide fabrics/ papers new look through floral dyeing/ imprinting.	
Solution	Target Market
Replacement of synthetic dyes with natural floral dyes by extracting the color pigments from the flowers at the religious places and then using the froth for composting purpose.	Those who have interest in fashion, those who are concerned about the environmental problems and those people who like using organic products.
Competition	Revenue Stream
All size companies/ vendors of synthetic dyes.	We will sell directly to the customers at religious places, craft fairs and by using online/social media.
Marketing	Expenses
Communication with the customers at religious places, through social media advertisements and exhibitions at social gatherings.	Materials including fabric/ paper, Steamer, strings, Utensils
	Marketing cost
	Inventory space
	Labor charges
Team	Milestone
Currently a team of three working for the cause. As the venture grows ahead, plan to add likeminded people.	With the progress of venture, we plan to expand it to explore market oriented needs.

acceptance for floral dyeing business model from the management of the religious places due to market potential with additional employment. It is a good sign that awareness is increasing about the environment friendly products. Floral dyeing is an organic initiative to replace use of synthetic dyes. Religious places have a maximum percentage of floral waste. Reuse and recycle of the religious floral waste for dyeing purpose is an environment friendly entrepreneurial venture. This Floral Dyeing business model has potential for new entrepreneurial and employment opportunities leading to sustainable development.

XIV. SUGGESTIONS

As an outcome of this research, researchers introduced a floral dyeing business model.

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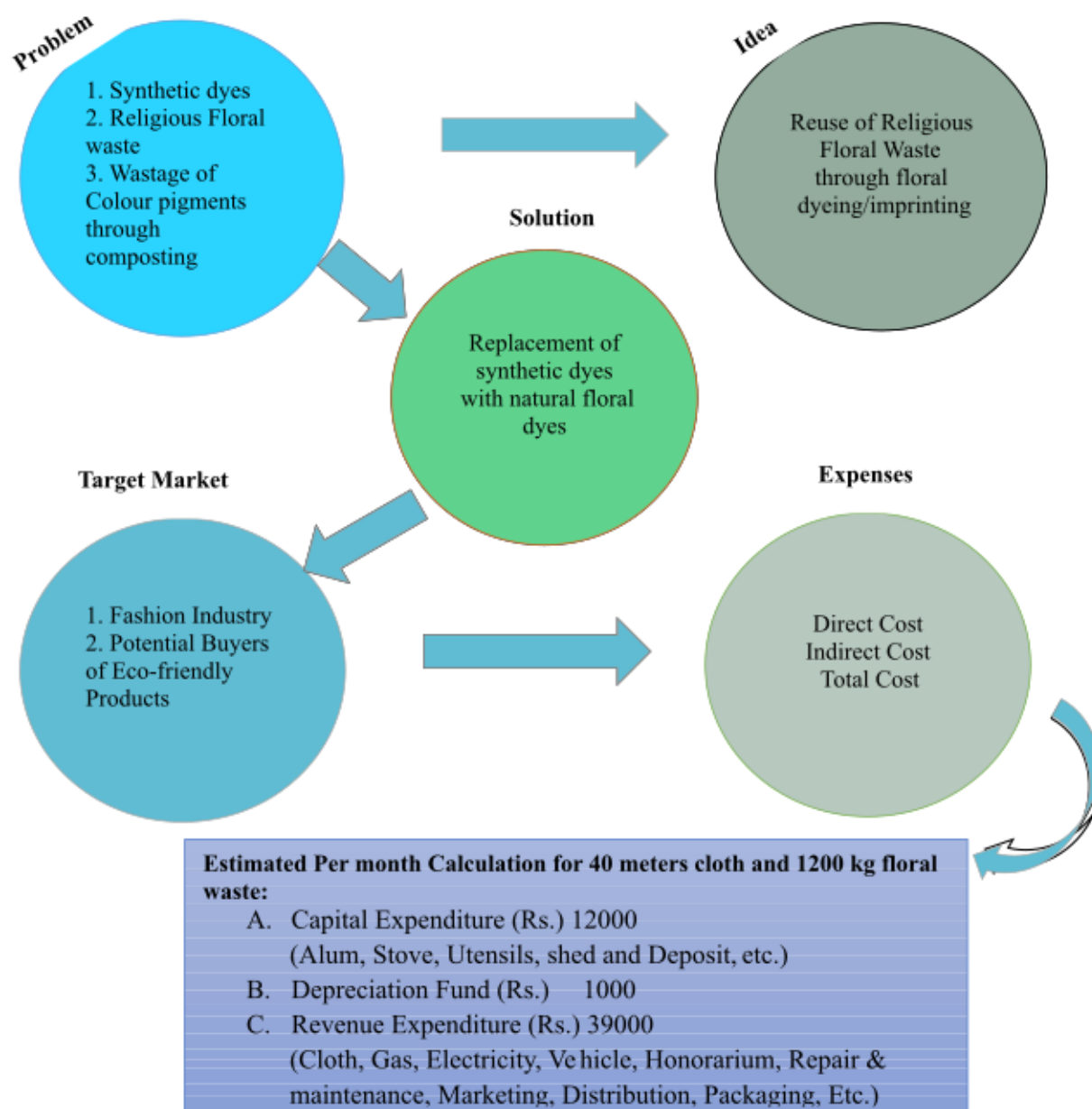


FIGURE 2. Floral dyeing business model

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