

**Developing and Assessing Eco-Fashion Handbags made of Water
Hyacinth**

By

**Ghousia Amrin, M
(13PTF004)**

A Thesis submitted to the
**Avinashilingam Institute for Home Science and Higher Education for
Women
Coimbatore - 641 043**

In Partial Fulfilment of the Requirements for the
Degree of Master of Science
in
Textiles and Fashion Apparel

March, 2015

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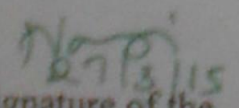
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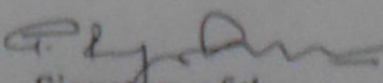
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Certified as Bonafide Research Work


Signature of the
Head of the Department


Signature of the
Guide

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CONTENT

CHAPTER	TITLE	PAGE NO
	LIST OF TABLES	
	LIST OF FIGURES	
	LIST OF APPENDICES	
I	INTRODUCTION	1
II	REVIEW OF LITERATURE	4
	2.1.Fashion Accessories	5
	2.1.1. History and Development	5
	2.1.2. Types of Fashion Accessories	5
	2.1.3. Recent trends in Fashion Accessories	8
	2.2.Handbag a Fashion Accessory	9
	2.2.1. Brief history of handbags	9
	2.2.2. Types of handbags	10
	2.2.3. Fabric used	13
	2.3.Study on Eco-Fashion	14
	2.3.1. Definition of Eco-Fashion	14
	2.3.2. The Evolution of Eco-Fashion	14
	2.3.3. Eco-Fashion concept in fashion accessories	15
	2.3.4. Eco-Fashion Brands and Designers	15
	2.3.5. Application of Eco-Fashion on fashion bags	17

2.4.Natural Resources for Fashion Accessories	17
2.4.1. History of Natural Fibres	17
2.4.1.1.Water Hyacinth	18
2.4.1.2.Processing	19
2.4.1.3.End uses	19
2.5.Handbag Making Process	21
2.5.1. Design development	21
2.5.2. Materials and Equipments	22
2.5.3. Pattern making	23
2.5.4. Construction	24
2.5.5. Weaving techniques	25
2.5.6. Embellishments	26
III METHODOLOGY	29
3.1. Survey	30
3.1.1. Selection of Tool	30
3.1.2. Sample selection	30
3.1.3. Conduct of the survey	31
3.1.4. Analysis of Data	31
3.2. Design Development through sketching for handbags	31
3.2.1. Nomenclature	31
3.2.2. Preparation for sketching	32
3.2.3. Evaluation and Selection of Sketches	33

3.3. Preparation for handbag making	33
3.3.1. Tools	33
3.3.2. Natural fibre and Processing	33
3.3.3. Fabric	40
3.4. Styles selected for constructing handbags	40
3.4.1. CH2	40
3.4.2. CH3	40
3.4.3. DP13	41
3.4.4. TB15	41
3.4.5. TRB17	42
3.5. Evaluation of Samples	42
3.5.1. Visual Inspection	42
3.6. Cost Estimation	43
IV RESULTS AND DISCUSSION	49
4.1. Data Analysis and Interpretation of the responses	49
4.1.1. Age Group of the Respondents	49
4.1.2. Education	50
4.1.3. Occupation	50
4.1.4. Income level	51
4.1.5. Consumers purchasing behaviour towards handbags	51
4.1.6. Awareness toward eco-friendly products	57
4.1.7. Secure environment with eco-friendly products	57

4.1.8. Purchasing products with environmental issues in mind	59
4.1.9. Consumers tendency to buy eco-friendly products	60
4.1.10. Consumers level of awareness towards the natural fibre made handbags	60
4.1.11. Source of information in knowing water hyacinth bags	62
4.1.12. Consumers interest towards buying water hyacinth handbags	62
4.1.13. Factors considered in buying eco-handbags	63
4.1.14. Willingness of the consumers to pay more for eco-handbags	64
4.1.15. Consumers who think that quality of eco-friendly bags is better than conventional bags	64
4.2. Consolidated Rating of Sketching	66
4.3. Visual Inspection of Eco-Fashion handbags	67
4.4. Cost Estimation	70
V	
SUMMARY AND CONCLUSION	71
BIBLIOGRAPHY	77
APPENDICES	88

LIST OF TABLES

TABLE NO.	TITLE	PAGE NO.
I	Nomenclature	32
II	Age group of the Respondents	50
III	Educational status of the Respondents	50
IV	Occupation of the Respondents	51
V	Income of the Respondents per month	51
VI	Opinion about Fashion	53
VII	Purpose of buying handbag	53
VIII	Frequency of buying handbags	53
IX	Reason for buying handbag	55
X	Usage of handbag	55
XI	Amount spent for handbag	55
XII	Materials preference for handbag	57
XIII	Awareness towards eco-friendly products	57
XIV	Secure environment with eco-friendly products	59
XV	Purchasing products with environmental issues in mind	59
XVI	Perception on eco-friendly product buying	59
XVII	Consumer's tendency to buy eco-friendly products	60

XVIII	Awareness towards water hyacinth bags	60
XIX	Source of information in knowing water hyacinth bags	62
XX	Interest towards buying water hyacinth handbags	62
XXI	Factors considered in buying eco-handbags	64
XXII	Willingness of the consumer to pay more for eco-handbags	64
XXIII	Quality of eco-friendly bags is better than conventional bags	64
XXIV	Consolidated rating of sketching	66
XXV	Visual Inspection of Eco-Fashion handbags in First criteria	67
XXVI	Visual Inspection of Eco-Fashion handbags in Second criteria	69
XXVII	Cost Estimation	70

LIST OF FIGURES

FIGURE NO.	TITLE	PAGE NO.
1	Types of Fashion Accessories	8
2	Types of Handbags	12
3	Age of the Respondents	52
4	Educational status of the respondents	52
5	Occupation of the Respondents	52
6	Income of the Respondents per month	52
7	Opinion about Fashion	54
8	Purpose of buying a handbag	54
9	Frequency of buying handbags	54
10	Reason for buying handbag	56
11	Usage of handbags	56
12	Amount spent for handbag	56
13	Materials Preference for handbag	58
14	Awareness towards eco-friendly products	58
15	Secure environment with eco-friendly products	58
16	Purchasing products with environmental issues in mind	61
17	Perception on eco-friendly product buying	61

18	Consumer's tendency to buy eco-friendly products	61
19	Awareness towards water hyacinth bags	63
20	Source of information in knowing water hyacinth bags	63
21	Interest towards buying water hyacinth handbags	63
22	Factors considered in buying eco-handbags	65
23	Willingness of the consumer to pay more for eco-handbags	65
24	Quality of eco-friendly bags is better than conventional bags	65

LIST OF PLATES

PLATE NO.	TITLE	PAGE NO.
I	Manual sketching for handbags	34-37
II	Selected styles for handbag construction	38
III	(a)-(e) Processing of water hyacinth	39
III	(a)-(d) CH2-Finished Bolster clutch bag	44
IV	(a)-(d) CH3-Finished Hand clutch bag	45
V	(a)-(d) DP13-Finished Drawstring pouch	46
VI	(a)-(d) TB15-Finished Tote bag	47
VII	(a)-(d) TRB17-Finished Trapezoid bag	48

LIST OF APPENDIX

APPENDIX

TITLE

NO.

- | | |
|-----|--|
| i | Questionnaire to Elicit Information about Preferences towards Eco-Fashion Handbags |
| ii | Fibre used for Handbag |
| iii | Fabric Details |
| iv | Visual Inspection of Eco-Fashion handbags in First criteria |
| v | Visual Inspection of Eco-Fashion handbags in Second criteria |

1. INTRODUCTION

“Small acts, when multiplied by millions of people can transform the world” –

Howard Zinn

“Eco-friendly” and “green” are terms referred to as several things, indicating such as renewability, sustainability, energy efficiency, and non-toxicity, being minimally invasive, having a reduction in carbon footprint, and having a reduction in CO₂ emissions (Koos, 2010).

Hence, in the act of reducing the pollution green products are becoming a concern to consumers. Green product refers to the products that incorporate the strategies in recycling or with recycled content, reduced packing or using less toxic material to reduce the impact on the natural environment (Patel *et al*, 2013). In recent days, fabric can be made from organic cotton, bamboo, banana fibre, hemp, indigo and wool. Organic fabric means that the plant or fibre used in creating a fabric did not use any chemicals or pesticides in the process of transforming it into the fabric. A popular fashion trend is using recycled materials in jewellery, designers use either old jewellery or scraps of fabric to create a new modern piece of jewellery (Emily, 2010).

Eco-friendly products are readily available nowadays. These include small articles from handmade paper bags, jute bags and recycled paper to eco-friendly fuels and natural fibre. Natural fibre industries employ millions of people all over the world, especially in the developing countries. As the major non-food commodity natural fibres and their products are processed in many small and large industries and consumers all over the world profit from the provided products. The promotion of the use of natural fibres as CO₂ neutral resource is believed to contribute to a greener planet. These helps in preventing damage to our surrounding from those harmful plastics, chemicals and non-biodegradable items.

Apart from these day to day articles which are used, more innovative eco-fashions are being developed and made available to consumers at different levels of the fashion spectrum, from casual clothing to haute couture. Consumer awareness about the fate of clothing through its life cycle may be the best hope for sustainability in the fashion industry (Claudio, 2007).

More than ever before, it seems that people are becoming personally invested in eco-conscious alternatives when considering their fashion choices. Whether having originated from the consumer or fashion industry professionals, the demand for 'green' options cannot be ignored. Sustainability in fashion is a focus for many brands which can be demonstrated by the rise of companies. Other trends which seem to be innately eco-conscious include the interest in vintage, upcycled and recycled clothing as recently explored (Oosten, 2014).

The newly explored trend of upcycled and recycled clothing are termed as "Refashion concept" which has been around for so many years from the period of world war. The first form of reusing fabric was in the form of quilt and this reusing concept would also help in reducing the waste storage (green.wikia.com). Another hot trend is the use of vegetable dyes on leather garments, whether it is purses, belts, handbags or wallets. Eco-friendly leather has also set to become a growing trend. Eco-friendly leather, which is vegetable-tanned, leather goods made from environmentally friendly discarded eel skins, which are 150% stronger than cowhide of the same thickness. (AFP RelaxNews, 2013).

At last, the impulse to go green is spreading faster than a morning glory. Organizations of all types are launching green campaigns—from the city of London's Congestion Charge on automobiles, to Wal-Mart Stores Inc.'s push to sell organic foods, to the University of Texas's construction of LEED green buildings. Consumers too are getting behind the idea of being greener. These changes have occurred because; consumers are very concerned about climatic changes (Bonini, 2008).

The development of green product has a long way to go, as it has barriers in its way such as the lack of awareness, negative perception, distrust, high prices and low availability. The consumers know about the climatic changes and also would like to take action against climate changes but don't know what to do. Some of the consumers have a negative thought about the product because they are not able to find out the right product in the market, a few consumers doubt not only the quality of green products, but also their very greenness. Most of the Eco-friendly products encounter this barrier which is nothing but the higher prices. Because consumers perceive the benefits of green goods to be small and long term, they often view the often higher costs of these products to be too high. When the consumers decide to buy Earth-friendly items, many consumers encounter a final hurdle i.e., the lack of availability.

Understanding these barriers is the first step to growing green consumers. Knowing what stops consumers from buying green products is only half the battle. The other half is knowing how to break down these barriers. These barriers can be broken down by educating the consumers, build better products, be honest, offer more of the eco-products, bring products to the people so that consumers would intend to buy them.

Several celebrities and designers have recently drawn attention to socially-conscious and environmentally-friendly fashion. It has become increasingly evident that there has been a noticeable shift in the collective consciousness regarding our escalating environmental issues. No doubt, wearing eco-friendly clothing helps conflict of the depletion of the world's natural resources. Earth is also a place of beauty and it's in this spirit that eco-fashion heeds the call to save the environment (Boushy, 2012).

Considering the above facts, the investigator decided to carry out a study **“Developing and Assessing Eco-Fashion Handbags made of Water Hyacinth”** with the following objectives.

- To examine the level of awareness of the consumers about eco-friendly products.
- To sustain the eco-fashion concept in designing handbags.
- To construct and evaluate selected eco-handbags.

2. REVIEW OF LITERATURE

The review of literature pertaining to a study on “**Developing and Assessing Eco-Fashion Handbags made of Water Hyacinth**” is discussed under the following headings:

2.1. Fashion Accessories

2.1.1. History and Development

2.1.2. Types of Fashion Accessories

2.1.3. Recent trends in Fashion Accessories

2.2. Handbag a Fashion Accessory

2.2.1. Brief history of handbags

2.2.2. Types of handbags

2.2.3. Fabric used

2.3. Study on Eco-fashion

2.3.1. Definition of Eco-Fashion

2.3.2. The Evolution of Eco-Fashion

2.3.3. Eco-Fashion concepts in fashion accessories

2.3.4. Eco-Fashion Brands and Designers

2.3.5. Application of Eco-fashion on fashion bags

2.4. Natural Resources for Fashion Accessories

2.4.1. History of Natural Fibres

2.4.1.1. Water Hyacinth

2.4.1.2. Processing

2.4.1.3. End uses

2.5. Handbag Making Process

2.5.1. Design development

2.5.2. Materials and Equipments

2.5.3. Pattern making

2.5.4. Construction

2.5.5. Weaving techniques

2.5.6. Embellishments

2.1. FASHION ACCESSORIES

2.1.1. History and development

Early in the development of accessories were the amulets, which were used to be worn as a guard from evils according to their superstitious believes. Throughout the history, women have adorned themselves with objects to create an image or style which is unique to them. Way earlier cavewomen adorn them with bones and teeth to make necklaces and bracelets. While men and women of ancient Egypt used gold, silver, ivory and turquoise as ornaments (LoAlbo, 2009).

The contemporary world as well as the historical world, accessories are utilized to emphasize their looks. Items such as the **Aglet** (plastic or metal sheath at the end of shoelace) began as a functional means for attaching men's hose and **Doublet** (man's snug-fitting buttoned jacket) in the 15th century and later morphed into fashion accessory for shoes (Sterlacci, 2009).

Likewise until 1920's knitted sweaters were utilitarian aesthetic items, not fashion statement. It was only a matter of time that these utilitarian items would be artistically adapted by the individual wearer and fashion had begun (Bramlett, 2012).

In the Victorian era, fashion accessories such as the fans, parasols and gloves were adorned by women to show their gender, race and class. In this era, women adopted all the fashion accessories to emphasize their leisurely lifestyle.

In the early 16th century in Italy, hat badges were worn by civilian men to symbolize their social status. Hat badges were worn often in the conjunction with a decorative sword and hilt. (en.wikipedia.org)

2.1.2. Types of fashion accessories

Fashion accessories are categorized into two main types: the one which is worn and the one which are carried. Accessories which are worn are **jackets, boots, shoes cravats, ties, hats, bonnets, belts, suspenders, gloves, jewellery, watches, sunglasses, shawls, scarves, socks and stockings**. Accessories which are carried are **hand fans, parasols, umbrella, and ceremonial swords** (Tomshinsky, 2013). Accessories that are worn and carried are explained below:

- **Jacket:** A jacket is a mid stomach length garment for the upper body. A jacket typically has sleeves, and fastens in the front or slightly on the side. A jacket is generally lighter, tighter-fitting, and less insulating than a coat, which is outerwear.
- **Boot:** A boot is a type of footwear and a specific type of shoe. Most boots mainly cover the foot and the ankle and extend up the leg, sometimes as far as the knee or even the hip.
- **Shoe:** A shoe is an item of footwear intended to protect and comfort the human foot while doing various activities. Shoes are also used as an item of decoration (Diamond, 2006).
- **Cravat:** The cravat is a neckband, the forerunner of the modern tailored necktie and bow tie, originating from 17th century Croatia.
- **Necktie:** A necktie or simply tie is a long piece of cloth worn for decorative purposes around the neck or shoulders, resting under the shirt collar and knotted at the throat.
- **Hat:** A hat is a head covering. It can be worn for protection against the elements, for ceremonial reason, religious reasons, for safety, or as a fashion accessory. In the past, hats were an indicator of social status.
- **Bonnet:** Bonnet is a term for a wide variety of styles of headgear for both sexes, but most often female, which has been in use from the Middle Ages to the present (Beaujot, 2013).
- **Belt:** A belt is a flexible band or strap, typically made of leather or heavy cloth, and worn around the waist. A belt supports trousers.
- **Suspenders:** Suspenders or braces are fabric or leather straps worn over the shoulders to hold up trousers. Straps may be elasticised, either entirely or only at attachment ends and most straps are of woven cloth forming an X or Y shape at the back.
- **Glove:** A glove is a garment covering the whole hand. Gloves have separate sheaths or openings for each finger and the thumb.
- **Jewellery:** Fashionable items like necklaces, bracelets, earrings and brooches have long been used to add stylish touches to all types of outfits (Swift, 2003).
- **Watch:** A watch is a small timepiece intended to be carried or worn by a person. A wristwatch is designed to be worn on a wrist, attached by a strap or other type of bracelet. A pocket watch is to be carried in a pocket.

- **Sunglasses:** Sunglasses are a form of protective eyewear designed primarily to prevent bright sunlight and high-energy visible light from damaging or discomforting the eyes. They have become a fashion statement now.
- **Stocking:** A stocking is a close-fitting, variously elastic garment covering the foot and some part of the thigh. Stockings vary in color, design and transparency (Evans, 2015).
- **Scarf:** A scarf is a piece of fabric worn around the neck, or near the head or around the waist for warmth, cleanliness, fashion or for religious reasons.
- **Shawl:** A shawl is a simple item of clothing, loosely worn over the shoulders, upper body and arms, and sometimes also over the head
- **Sock:** A sock is an item of clothing worn on the feet. Socks help to absorb this sweat and draw it to areas where air can evaporate the perspiration. In cold environments, socks decrease the risk of frostbite (Raaz, 2012).
- **Hand-held fan:** A hand-held fan is an implement used to induce airflow for the purpose of cooling or refreshing oneself. But generally, purpose-made hand-held fans are shaped like a sector of a circle and made of a thin material (such as paper or feathers) mounted on slats which revolve around a pivot so that it can be closed when not in use.
- **Umbrella:** An umbrella or parasol is a canopy designed to protect against rain or sunlight. The word parasol usually refers to an item designed to protect from the sun; umbrella refers to a device more suited to protect from rain. Often the difference is the material, some parasols are not waterproof.
- **Ceremonial sword:** A ceremonial weapon is an object used for ceremonial purposes to display power or authority. They are often used in parades and as part of dress uniforms (Nurja, 2014).

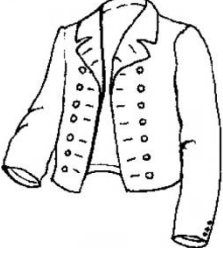











 Jacket	 Boot	 Shoe	 Cravat
 Necktie	 Hat	 Bonnet	 Belt
 Suspenders	 Glove	 Jewellery	 Watch
 Sunglass	 Stocking	 Scarf	 Shawl
 Socks	 Hand-held fan	 Umbrella	 Ceremonial sword

Figure 1

Types of Fashion Accessories

2.1.3. Recent trends in fashion accessory

Dressing up is an art; the stylish clothing is complete only when one adds the appropriate fashion accessories to their clothing. A right kind of accessory can enhance the personality of the wearer.

The top 5 accessories trend for fall 2014 was knee high boots which was in full swing in the year 2014. Oversized blanket scarves were seen wrapped around models in the Milan fall 2014 runways. The bucket bags were recommended in summer 2014 as well as in fall 2014. Neutral colours were chosen to team up with wide range of attire. Dressy gloves were in trend for fall 2014 with either shimmering metallic shades or basic neutral colours. This fall 2014 is all about going bare neck with statement earrings (Strauss, 2014).

According to vogue magazine handbags for spring 2015 collection are minimalist clutches and hands-free satchels which are into the spotlight (Bickham, 2014). According to the press release of untitled magazine the Resort 2015 top accessory trend is of mixing bright contrasting colours as a unique take on colour blocking trend set by **Christian siriano**, a American designer, **Henry Holland**, an English fashion designer , **Alice and Olivia**, a New-York based clothing company.

The collection of jewellery for the season 2015 is heavy chocker designed by **Chanel**, a French designer. In the Resort 2015 collection snakeskin with neutral tones especially in shoes is introduced. But 3.1 Phillip Lim's (an American fashion designer of Chinese descent) collection has a little colour to this slithering trend (Ceasarine, 2014).

This season the bags that make a statement are in trend. As the statement can be found on more than just t- shirts is the thought of the designer **Moschino**, an Italian fashion designer, **Furla**, an Italian company, **Chanel**, a French designer. As in for sandals the knee-high gladiator sandals are back in trend. And as in for boots American designer **Alexander Wang's** is obsessed with the blue suede knee-high and the French fashion house **Louis Vuitton's** funky bright heels are sure to turn heads (Ali, 2014).

2.2. HANDBAG A FASHION ACCESSORY

2.2.1. Brief history of handbags

In the early period of time the usage of handbags started to carry food, tools and money gradually it changed into accessory that can make or break an outfit. But things change as time moves on, the handbags which were considered functional is now more of a style statement.

In the earliest history handbags were like little sacks containing pomanders (scented oranges) flint and money which were carried by gentlemen and known as pockets. Later by the 1400's, both men and women were wearing purses. By the 1500's these bags became a

status symbol. The drawstring bags were used, and as fashion changes women started carrying these bags under their skirts (Frings, 2002).

In the period of 16th century the breeches were made with built in pockets so men reduced the usage of handbags. But as for women in this era the skirts became wider so they wore it underneath their petticoats. The other group of people such as the peasants and travellers wore cloth bags diagonally across the body (Kemp-Gatterson, 2009).

In the 17th century young girls were taught embroidery which was necessary skill for their marriage. In this century the simple handbags became more intricate in shape as well as in material. By the 18th century, pouches for both men and women disappeared. After the French revolution, the full skirts lost favour and more slender, narrow and delicate clothing came into style thus providing a greater need for handbags (Stewart, 2009).

The designs which decorated the bags changed, at the same time new materials came into use. Geometric designs generally became more complex during 18th century. Simple repeated geometric motifs were still in use, but more elaborate designs formed by combination of geometric form became common, and the wide range of colours were used for the elaborate new patterns (Porter, 1990).

In the 19th century onwards, handbags became a must for fashion and have remained so through the years. By the 1930's the clutch handbags, satchel, clasp bags came into mainstream fashion. Between 1940's and 1950's handbags were made by various materials and during the 1960's silk and genuine leathers were used and in 1970's vivid colours were used for handbags (Pedersen, 2006).

By the 20th and 21st century technology advancement led to endless production of handbags in various textures and materials and also various shapes according to their usage and their trend.

2.2.2. Types of handbags

There are different types of handbags which are available in various shapes according to the usage and are listed below:

- **Back Pack:** It is a sack that is worn across the back in between the shoulders. It can also be slung on either of the shoulders. They are also known as shoulder bags or rucksack. A lot of things can be carried and it's more appropriate as college bag.

- **Barrel:** The bag is a horizontal, cylindrical shape purse with a zip top closure and a short handle (Stewart, 2009).
- **Bucket:** It is a square shaped stiff shoulder bag basically like a bucket. It is big enough to carry a lot of things.
- **Camera:** It is a rectangular bag with rounded corners. This bag is similar to the shape of the case of the old camera.
- **Clutch:** This is a small bag with no handles or straps. It is carried casually in the hands or tucked under the arm (Sandlin, 2009)
- **Double handle:** A bag with double handles and it is usually worn on the shoulder and is found in many sizes.
- **Drawstring:** Drawstring is a small pouch made of fabric such as silk, satin and velvet with embellishments. This bag has a cord woven through the eyelets together and closed at the top. They can be hanging freely in the wrist keeping hand free (Kaur, 2010)
- **Facile:** This bag has a covered metal frame that snaps together as the closure. The wearer must apply pressure to open the bag instead for closing the bag.
- **Flap:** This bag has a flap over closure and is usually one piece.
- **Frame:** This bag has a metal top fastening with a snap, knob, or clasp closure. It is similar to a hand clutch.
- **Hobo:** Hobo is a crescent shaped bag with a zip closure worn on the shoulder. It is soft flexible and dips in the centre (Entrepreneur magazine, 2012)
- **Luggage frame:** It is in the structure of a luggage with a metal frame top fastener.
- **Luggage handle bag:** A bag with hard structured handle. This type of bag is carried at the crook of the arm.
- **Satchel:** It is a square or dome-shaped bag with a zip closure. It has a wide, flat bottom and a gusset. Satchel can be carried at the crook of the elbow. It is a short handled handbag or with a slight variation of handle which can be longer and carried over the shoulder and tucked under the armpit (Pedersen 2006).
- **Shoulder handbag:** It has long shoulder strap or chains which hang down till the knee. It can also be worn across the body.
- **Tote:** It is a large bag with two handles.
- **Trapezoid:** It is A-line shaped bag.

- **Wire frame:** This bag is lined with a wire piping running along the top to hold the frame's shape (McGehee, 2011).
- **Minaudiere:** It is similar to clutch but is made of inflexible frame.
- **Accordion:** This bag has two or three pouches side by side held together. The bag has the expanding capacity as per the things stored in it.
- **Reticule:** This bag is available in various sizes made of strings, net or meshes (Blumenthal, 2011).

 Back pack	 Barrel	 Bucket	 Camera
 Clutch	 Double handle	 Drawstring	 Facile
 Flap	 Frame	 Hobo	 Luggage frame
 Luggage handle	 Satchel	 Shoulder bag	 Tote
 Trapezoid	 Minaudiere	 Accordion	 Reticule

Figure 2
Types of Handbags

2.2.3. Fabric used

The function of the bag is the main consideration when it comes to choosing a fabric. For a working bag that will carry heavy load and that must survive a good bit of wear and tear, then one will require a sturdy durable fabric. Heavy weight cotton or linen and firmly woven synthetics are good choices (Parks, 2000).

Modern purses and bags are made from a variety of materials, depending on their use. Some bags such as rucksacks and briefcases are waterproof, so that the things inside it are dry during rainy season. Handbags and wallets are often made from leather so that they last long time. Other bags such as grocery bags are made from paper and plastic (D'cruz, 2009).

The most common materials that are used to make handbags are as follows:

- **Leather:** Leather is natural product which comes from almost any animal, and is called skin. It is very attractive, beautiful, appealing and luxurious. The types of skin available are cowhide, calf, sheep/lamb, goat, pigskin, shear lings and reptiles (alligator, lizard, python, and anaconda).
- **Synthetics:** Synthetic leather is usually referred to as PU (polyurethane) or PVC (polyvinyl chloride). Synthetic material is used so that it is animal friendly and it also avoids the inequalities and imperfections that animal skins possess (Blumenthal, 2011).
- **Other materials:** There are so many other materials that are used to make handbags that one can see even in garments. They are as follows:
- **Cotton:** Cotton is used both in the lining and the exterior of bags. It is available in many different weights.
- **Canvas/denim:** It is strong, rugged and is usually used for the exterior; it is available in different weights.
- **Velvet:** It gives a luxurious look, and has fabulous depth of colour, and a strokeable texture.
- **Wool:** It is usually used for exterior of bags and is fabulous for bag making. It gives a luxurious look.
- **Silk/satin:** Silk and satin are both luxurious fabric that have beautiful look, texture and movement. It is used as both exterior or lining (Lam, 2012).

2.3. STUDY ON ECO-FASHION

2.3.1. Definition of Eco-Fashion

Eco- Fashion, also known as earth friendly fashion or sustainable clothing is trendy and in vogue. The term sustainable fashion is typically used to encompass a scope of fashion production or design methods that are environmentally and / or ethically conscious. Sustainable is often used interchangeable with other words such as “eco”, “green” and “organic” (Gordon, 2014).Sustainability improves the lives, the society, the health of the surrounding environment; it is a chief part of our future. In fact wearing recycled or second hand clothing has become fashionable. However sustainable clothing seems to be more than a passing trend (Gogerly, 2014).

2.3.2. The Evolution of Eco-Fashion

Eco-Fashion is one of the most compelling topics in fashion today. Eco-Fashion is part of the growing design and value-based philosophies and trend of sustainability into every nook and corner possible, in hopes of making the world better through fashion. The aim of eco-fashion is to support the term environmentalism and social responsibility.

The eco-fashion was started first as part of the modern environmental movement. In 1970's, it is associated with the hippie culture's influenced dedication to chemical-free dyes, natural textile and handmade products (Sagan, 2012).By 1980's, it lead to anti-fur and anti-leather campaigns. The fashion clothing made its way to the fashion runway with an English designer **Katharine Hamnett** designing slogan T-shirt and a Belgian designer **Martin Margiela** launched the use of recycled materials collection (English, 2013).

By the 1990's, first article on “Natural selection” was published, then **Esprit** launched ecological clothing, **Giorgio Armani**, an Italian fashion designer introduced hemp textiles. From 2000-2009, Eco-fashion is on the rise. In 2001, **Stella McCartney** is an English designer launched her brand using only animal friendly material. In 2002, **Trash couture** established using recycled couture fabrics and vintage lace. In 2004, first ethical sustainable artisanal design and the first Fair-Trade International were conducted (Fletcher, 2008).

In 2005, **Linda Loudermilk** launched her luxury sustainable fashion label term eco-luxury. In 2006, the British fashion council launches **Esthetica** at London fashion week. In 2009, women's wear magazine reports that consumer is “ready to go eco” (Eagan, 2014).

By 2010-2011, mainstream is paying attention and fashion authorities such as **Marie Claire** and **Elle** magazines are openly discussing the ideas behind eco-fashion. Big brands are jumping on producing eco-friendly lines. **H&M** announces its conscious collection (Rinaldi, 2014). **Levi** releases its waste less jeans which are composed of at least 20 per cent recycled plastic. This collection is a bigger push to reduce environmental impact. Likewise there are so many designers and brands that are walking towards eco-friendly lines (Berfield, 2012).

2.3.3. Eco-Fashion concepts in fashion accessories

Eco-friendly products that contribute to green living or practice that help conserve resources like water and energy. Making a truly eco-friendly product keeps both environmental and human safety in mind. The concept of eco-fashion is to reduce toxicity in the environment. It is a way in which the eco-system is not depleted (Holzer, 2010). The aim is that the bio-degradable products break down through natural decomposition. These eco-friendly products cause minimal harm to people and the environment. Eco-Consciousness is the desire to conserve, the desire to be connected to the protection of the earth and the desire to make difference (DuToit, 2013).

The non eco-friendly products when dumped into the landfills in a significant amount, their toxic effect spreads further afield. Thus the concept of such products is to reduce the harmful impact on the environment (Fons, 2013).

2.3.4. Eco-Fashion Brands and Designers

Since the organic and sustainable apparel market are growing. Sustainably designed handbags have made its way through the unsustainable world and many designer and brands are launching their products. Sustainable designed handbags are made from vegetable dyed leather to recycled and organic materials (Post Consumer Team, 2013).

2.3.4.1. Fashion Brands

Levi's is a well known brand. Levi's launches line of water less jeans collection in spring 2011, which saves approximately 16 million litres of water (Kaufman, 2011). On the other hand, H&M a fast-fashion retailer, they started moving towards sustainable future. Eco-chic "conscious collection" was launched in spring 2010; this collection was made from fabrics such as organic cotton, recycled polyester, organic linen and tencel (Nasser, 2013).

The brand Vegan Queen launched a “Eco-Luxury”, a line of handbags. These handbags are recyclable, non-toxic, organic, sustainable and cruelty-free (Guertin, 2008). Coclico brand has the largest variety of eco-friendly shoes. They produce from clog to flats to heels. Wedges are made from recycled Portuguese cork and local Spanish pine; leather is sourced only from local tanneries using environmentally conscious practices and vegetable tanning is done (Folan, 2013).

Mia Bambina is a brand which has organic and fair trade clothes and toys for babies. They produce organic cotton bandana bibs and matching baby grows. There are so many other brands which are eco-conscious and want to improve the surrounding in which they live in (Phelan, 2012).

2.3.4.2. Fashion Designer

Many fashion designers announced their eco-collection, different recycle methods and materials which were applied to support their concept with creativity. **Stella McCartney**, an English designer is one of the fashion world’s consciences driven well-known designer. Stella is an avid animal right campaigner; she never uses leather or fur. Her line is not only completely vegan and cruelty-free, she has also pioneered some innovative sustainable fabric technology (Welch, 2013). Beth Springer, a U.S based designer uses organic hemp, linen, plant dyed leather for the designing of handbags (DuFault, 2012).

Firda Giannini, is an Italian fashion designer, **Gucci’s** creative director launches a new line of eco-friendly handbags. Eco-friendly leather is becoming a growing trend which is vegetable tanned (AFP RelaxNews, 2013). On the other hand Gucci has already developed a variety of products such as sustainable eyewear, for example liquid wood (cent per cent organic bio-plastic material) and ballerina shoes realised in bio-plastic (Armstrong, 2013).

Safia Minney, is a British social Entrepreneur, one of the earliest pioneers of ethical and environmentally friendly main stream fashion, starting her label People tree in 1991, People tree developed the first integrated supply chain for organic cotton from farm to final product (Dufault, 2012).

2.3.5. Application of Eco-fashion on fashion bags

In the fashion world, an eco-friendly fashion has been concerned since the population has begun to realize that the fashionable items that are purchased are not ecologically friendly. Consumers are increasingly becoming conscious and sensitive on the influence of innovation, as only in the beginning stage the material and the energy can be saved and also to facilitate the use and maintenance of the product (Waller, 2014)

Eco-friendly designers apply their concept of eco-friendly on one of the important components of fashion i.e. fashion accessories. Eco-fashion accessories, it is a term that the accessories are made with environmentally friendly materials (Miles, 2015). In which products are made without any chemical and toxic materials during the making process, more importantly from the organic or sustainable materials a new accessories are made. It has become a part of the fashion industry to promote the green movement and the new focus on conservation and protection of world (Leo, 2008).

There are some companies that produce handbags, necklaces, bracelets and even belts by using recycled products. Recycled newspapers are used to make handbags and shoes. Also the tin opener can be used as recycled accessory, for example the handbags can be made out of the tin openers by interconnecting the loops (Ramirojosh, 2012).

Nowadays it has become common that designers use recycled materials and the natural fibres to create it into new accessories. In spring 2012, **Stella McCartney**, an English designer launched a new eco-friendly line of sunglasses (Lee, 2012). **Donna Karan**, an American designer has created T-Shirt made from a blend of bamboo and organic cotton (Seventeen Magazine, 2009).

2.4. NATURAL RESOURCES FOR FASHION ACCESSORIES

2.4.1. History of Natural Fibres

The use of natural fibres for textile materials began recorded history. The oldest indication of fibre use is probably the discovery of flax and wool fabric in the 7th and 6th centuries B.C. Several vegetable fibres were also used by prehistoric people. Hemp is the oldest cultivated fibre plant originated in south East Asia. Flax was cultivated way back before 3400 B.C. (Kozlowski, 2012).

The manufacture of silk and silk products originated in the highly developed Chinese culture; the invention and development of sericulture and method to spin dated from 2640 B.C. The oldest cotton fibres and boll fragments dated from around 5000 B.C. Cotton has been cultivated in India over 5000 years. Fragments of cotton fabrics have been found indicating to 3000 B.C. (Britannica, 2014).

Linen is the oldest of all domestically produced fibres. Linen was used extensively at the height of great civilization, including the eras of the Egyptian Pharaohs, the Golden Age of Greece and the Imperial Age of Rome. In the early medieval centuries, linen was declined but in 11th century A.D. it raised again when it was discovered that linen helped cure skin diseases including leprosy (Nielson, 2007).

With improved transportation and communication, textile Manufacturing increased. New fibre plants were also discovered and their use explored. In the 18th and 19th centuries, the industrial revolution encouraged the further invention of machines for use in processing various natural fibres, resulting in tremendous fibre production (Shah, 2009).

2.4.1.1. Water Hyacinth

Water hyacinth is an aquatic plant which can live and reproduce floating freely on the surface of fresh waters or can be anchored in mud. Plant size ranges from a few inches to a metre in height. Its rate of proliferation under certain circumstances is extremely rapid and it can spread to cause infestations over large areas of water causing a variety of problems (Gopal, 1987). It grows in mats upto 2 metres thick which can reduce light and oxygen, change water chemistry, affect flora and fauna, and cause significant increase in water loss due to evapotranspiration(sum of evaporation and plant transpiration) (Navarro *et al*, 2000).

Water hyacinth is native to the Amazon basin in South America and was brought to Australia in the 1890s as an ornamental plant. The first record of water hyacinth in New South Wales (NSW) was in 1895. It has proliferated in many areas and can now be found on all continents apart from Europe. It is particularly suited to tropical and sub-tropical climates and has become a problem plant in areas of the Southern USA, South America, East, West and Southern Africa, South and South East Asia and Australia (Burton *et al*, 2010).

The plant is a perennial aquatic herb (*Eichhornia crassipes*) which belongs to the family *Pontedericeae*, closely related to the *Liliaceae* (lily family). The mature plant consists

of long, pendant roots, rhizomes, stolons, leaves, inflorescences and fruit clusters. The plants are upto 1 metre high although 40cm is the more usual height. The inflorescence bears 6 - 10 lily-like flowers, each 4 - 7cm in diameter. The stems and leaves contain air-filled tissue which give the plant its considerable buoyancy. The vegetation reproduction is asexual and takes place at a rapid rate under preferential conditions. (Herfjord *et al*, 1994).

2.4.1.2. Processing

There are seven steps that are followed to make water hyacinth products

- i. Water hyacinth is collected.
- ii. The dirt from the stems was cleaned.
- iii. Then the stems were dried under the sunlight (Anwary, 2013).
- iv. Choose dried water hyacinth which has the same color.
- v. Weave dried water hyacinth after soaking them into water for few seconds.
- vi. Dry them again to protect the completed products from being moldy.
- vii. The product is completed (Huyen, 2007).

2.4.1.3. End uses

The following are considered a number of possible uses for the plant, some which have been developed and others which are still remain as ideas only.

Paper: The water hyacinth fibre alone does not make a particularly good paper but when the fibre is blended with waste paper or jute the result is good. The pulp is dosed with bleaching powder, calcium carbonate and sodium carbonate before being heated. The quality of the paper is low and is used for making folders, boxes, etc (Turner *et al*, 2013)

Fibre board: The chopped water hyacinth stalks are reduced by boiling and then washed and beaten. The pulp is bleached and mixed with waste paper pulp and a filter agent such as china clay and the pH is balanced. The boards are floated in a vat on water and then finished in a hand press and hung to dry (Calvert, 2002).

Yarn and rope: The fibre from the stems of the water hyacinth plant can be used to make rope. The stalk from the plant is shredded lengthways to expose the fibres and then left to dry for several days. The rope making process is similar to that of jute rope. The finished rope is treated with sodium metabisulphite to prevent it from rotting (Ong'anga'a, 2006).

Basket work: Water hyacinth is dried and used to make baskets and matting for domestic use. The key to a good product is to ensure that the stalks are properly dried before being used. If the stalks still contain moisture then this can cause the product to rot quite quickly (Cuthbertson, 2001).

Biogas production: The possibility of converting water hyacinth to biogas has been an area of major interest for many years. Conversion of other organic matter, usually waste or human waste, is a well established small and medium scale technology in a number of developing countries. Water hyacinth has very high water content and therefore harvesting effort yields a low reward in terms of organic matter for conversion to biogas (Awange, 2006).

Water purification: Water hyacinth can be used to aid the process of water purification either for drinking water or for liquid effluent from sewage systems (Parsona *et al*, 2001). In a drinking water treatment plant, water hyacinth has been used as part of the pre-treatment purification step. Clean, healthy plants have been incorporated into water clarifiers and help with the removal of small flocks that remain after initial coagulation and flock removal or settling. (Haider 1989). The result is a significant decrease in turbidity due to the removal of flocs and also slight reduction in organic matter in the water.

Animal fodder: Studies have shown that the nutrients in water hyacinth are available to ruminants. In Southeast Asia some non-ruminant animals are fed rations containing water hyacinth. In China, pig farmers boil chopped water hyacinth with vegetable waste, rice bran, copra cake and salt to make a suitable feed. In Malaysia fresh water hyacinth is cooked with rice bran and fishmeal and mixed with copra meal as feed for pigs, ducks and pond fish. Similar practices are much used in Indonesia, the Philippines and Thailand (National Academy of Sciences, 1976). The high water and mineral content mean that it is not suited to all animals. The use of water hyacinth for animal feed in developing countries could help solve some of the nutritional problems that exist in these countries. Since humans cannot eat water hyacinth directly, they can feed it to cattle and other animals which can convert the nutrient into useful food products for human consumption.

Fertilisers: Water hyacinth can be used on the land either as a green manure or as compost. As a green manure it can be either ploughed into the ground or used as a mulch. The plant is ideal for composting. After removing the plant from the water it can be left to dry for a few days before being mixed with ash, soil and some animal manure (Menon, 2013). Microbial

decomposition breaks down the fats, lipids, proteins, sugars and starches. The mixture can be left in piles to compost, the warmer climate of tropical countries accelerating the process and producing rich pathogen-free compost which can be applied directly to the soil. The compost increases soil fertility and crop yield and generally improves the quality of the soil (Roberts, 2012)

Fish feed: The Chinese grass carp is a fast growing fish which eats aquatic plants. It grows at a tremendous rate and reaches sizes of up to 32 kg (National Academy of Sciences, 1979). It is an edible fish with a tasty white meat. It will eat submerged or floating plants and also bank grasses. The fish can be used for weed control and will eat upto 18 - 40% of its own body weight in a single day (Brijji, 1987).

2.5. HANDBAG MAKING PROCESS

2.5.1. Design development

Design is the end result of a creative process resulting in a product for a few people, such as a 'designer' chair or a stylish car. Others may look at design as a creative process going further than product appearance, delivery products with improved ergonomics, functionality and integrated brand identity (Renfrew, 2009).

Aesthetic quality is at the artistic roots of the design profession and is undeniably a very important characteristic of many successful products, but it is not the only aspect that design has to offer (Smith *et al*, 2012). Design has enlarged its area of attention from product development to the development of services and process. Nowadays, functionality, ergonomics and at least some environmental considerations are likely to be incorporated into the design brief at the start of the development process (Gupta *et al*, 2009).

As a consequence, awareness is growing within the design community that designers could and possibly should do better by offering new solution to a wide range of societal needs; ethical, humanitarian, and environmental issues (Manzini, 2008). Design can be designed to conceive the idea for some artefact or system and/or to express the idea in a form. It would also mean reaching the goal within constraints (Sarkar, 2011). The goal mainly consists of the target and the purpose of design; where the inspirations based on colour, texture and pattern for these designs are obtained from films, books, nature, vintage shopping, magazines, museums, and photographs. Thus design development is done keeping

in mind the target customer, season, social issues, brand identity and establishing the product into market (Mckinney, 2008).

2.5.2. Materials and Equipments

To make handmade bags, one needs a sewing machine, and all tools and materials that any sewer has on hand- pins, needles, thread, marking tools, scissors, pinking shears, tape measures and many more.

Sewing machine: To make the handbags sewing machine is most essential equipment. Before beginning to sew in earnest, check the thread tension using a piece of the fabric.

Cutting

Rotary cutter: A rotary cutter greatly increases the speed and accuracy of fabric cutting.

Cutting mat: Used with a rotary cutter. Choose one that has both metric and imperial gridlines (centimetres and inches). The gridlines are also really helpful when drafting own bag patterns.

Dress making scissors: Choose scissors that cut all the way through to the tip, are as heavy as is comfortable (as the weight aids cutting stability), and are angled with the handles raised upwards (Mallalieu, 2014).

Embroidery scissors: Small, fine-printed scissors are essential for precision snipping.

Seam ripper: For unpicking seams and perfect for making tiny incisions for magnetic snaps and buttonholes.

Pinking shears: It cuts a zigzag line. It serves two purposes-reduces bulk in curved seams and prevents raw edges from fraying (West, 2014).

Marking, measuring and pinning

Disappearing marker: This marker is more precise than chalk. It will disappear within 48 hours.

Hera marker (or bone folder): This useful tool makes an indent in the fabric from pressure only. If the fabric is unsuitable for a disappearing marker this tool is used. It is also great for pre-creasing a fabric when making folds or pleats.

Tape measure: To make measurements.

Sewing pins: It is used to pins up two layers of fabric before stitching.

Hand sewing needle: Although sewing machine is mostly used, at times hand needle is also used, for example- when sewing a button (Shrader, 2009).

Bag making tools

Bodkin: A Bodkin is used for speedy threading of cord or elastic through fabric tubes or casings. Attach the cord/ elastic to the bodkin and thread the bodkin through the fabric tube.

Tailors awl: An awl is useful for making holes in fabric for rivets, poking out corners in fine straps. Two types of awl are available- one with sharp point and the other with rounded tip.

Hole punch: A hole punch is used to cut neat holes in fabric for eyelets (grommets) or popper snaps. This hole punch has various sizes (Lam, 2012).

Fabric glue: Use good quality clear drying fabric glue. It can be just as effective as stitching.

Thread: For ease of use and to make long lasting bags, use good quality all purpose polyester thread.

Loop turner: This simple tool is used for turning fabric tubes the right way out for fabric strap making (Li, 2009).

Sewing clips/ mini bulldog clips: When the layers are very thick these strong clips are used to hold pieces of fabric together temporarily.

Hammer and pliers: Small hammers are used when working with rivets and eyelets. There are two pairs of pliers for opening and closing metal rings and links in purse chains (Urmann, 2009).

2.5.3. Pattern making

Pattern making is full scale two dimensional design of the garment or item with or without seam allowance made and cut on gateway paper and parchment paper. These pieces of paper shapes are traced onto the fabric to be cut, with each individual pattern piece serving as a form for an individual part of the garment or item sewn (Padmavati, 2009).

The patterns are always filed along with the parent design and draft for future consultation. Pattern is then placed on the fabric thus to be used for making the garment or item following the instructions mentioned on the pattern. Each pattern carries all the instructions that need to be followed like grain line, on fold etc. (Kamau, 1988).

The fabric requirement for a garment or an accessory are calculate as follows:

Width of the required fabric: Width of the pattern piece along with required seam allowance; are calculated and this gives the width of the required fabric.

Length of the fabric required: Length of all the vertical measurements along with the seam allowance are calculated with grain. Grain line should always be placed parallel to the selvedge i.e. length of the fabric (The Editors of Lark Books, 2013).

The shape and dimensions of the sides and base of the bag, and dimensions of the gusset, pockets and flaps if the bag has them are also taken into account to calculate the required material. Then draw these shapes onto paper and add an extra 1/2 inch to each edge for a seam allowance. The same pattern pieces are used to cut both the lining and the outside fabric (Brennan, 2006).

Pattern making for constructing a bag is done as described below:

- First make pattern pieces for the base, two sides and two handles (if required) according to the shape and size preferred.
- Then draw the pattern pieces on the pattern paper, according to the measurements that are noted on the pattern sketches (Lewis, 2012).
- Make sure that each of the adjoining seams should be of the same measurement. For example, the bottom side pieces matches perfectly with the edge of the bottom piece.
- The shapes should be perfectly symmetrical when measured.
- Carefully cut out the pattern pieces and then after the pattern are cut pin these patterns on the desired fabric and cut along the pattern line (Galvin, 2005).

2.5.4. Construction

- Fabric Selection: Choose the fabric for the bag and also matching fabric for the lining.
- Fabric cutting: Cut out the body of the bag, inside lining and straps. Cut the same pieces out from the interfacing as well (Saylor, 2010).

- **Interfacing:** This makes the bag stiffer and more durable. Iron the shining side down on to the wrong side of the fabric.
- **Straps:** Press and fold the strap in half length wise with the iron. Once it has a nice fold open the fold and bring raw edges into the fold line and press in place. Fold new edges together and stitch along the new edge length wise to close up fold and to make the strap (McGehee, 2011).
- **Sewing:** Sew the body of the bag together with a seam allowance. Sew the sides and the bottom leaving the top of the bag unstitched (Lawrence, 2009).
- **Finishing corners:** With fabric bag still on the wrong side (side with interfacing showing) open the bag and squeeze together the corners lining up the seams of the bottom of the bag and the side of the bag. It should look like a triangle. Stitch across the top of the triangle about 1 1/2 inch. The deeper the stitch the wider the bottom of the bag will be. Repeat for the other corner (Malone, 2002).
- **Attaching strap:** Apply the finished straps to the back and front of the bag. Place the strap in the required area at equal distance from each other.
- **Top stitching:** Top stitch around the top of the bag to give it a nice finishing touch and stitch the lining in place inside the bag (Minshall, 2008).

2.5.5. Weaving techniques

Weaving is a method of fabric production in which two distinct sets of yarns or threads are interlaced at right angles to form a fabric or cloth. The weaving techniques are as follows:

- **Basket weaving:** Basket weaving is the process of weaving pliable materials into a basket or other similar form. Basketry was classified as plain and twining basketry.
 - **Plain basketry:** Actually it consists of multiple horizontal strands weaved over multiple vertical strands.
 - **Twining basketry:** Twining actually refers to a weaving technique where two or more flexible weaving elements cross each other as they weave through the stiffer radial spokes (Navajo School of Indian Basketry, 1903).
- **Twill pattern:** This is done by passing the weft thread over one or more warp threads and then under two or more warp threads and so on, with a "step" or offset between rows to create the characteristic diagonal pattern.

- **Braiding:** A braid is a complex structure or pattern formed by interlacing three or more strands of flexible material such as textile fibres, wire, or hair (Murasugi & Kurpita, 1999).

2.5.6. Embellishments

The types of embellishments that can be used in handbags are as follows:

Lace: Lace is a delicate fabric made of yarn or thread in an open web like pattern, made by machine or by hand. Originally linen, silk, gold, or silver threads were used. Now lace is often made with cotton thread, although linen and silk threads are still available. Manufactured lace may be made of synthetic fibre. A few modern artists make lace with a fine copper or silver wire instead of thread (Powys, 2013).

Appliqué: Appliqué is a surface pattern that is used to decorate an aspect of a garment or product. Appliqué is a technique of applying one fabric to another in a decorative manner. Designs are cut from a printed fabric or trace any pattern on the material used. Appliqué may be fixed to fabric by hand or machine. For hand appliqué, button hole stitch is commonly used. If the edge of appliqué is turned under, slip stitch or ordinary machining can be done. Zigzag machine is very useful in concealing and securing the raw edges of appliqué (Smith, 2010).

Crochet: Crochet is a process of creating fabric from yarn, thread, or other material strands using a crochet hook. Crocheting, like knitting, consists of pulling loops of material through other loops, but additionally incorporates wrapping the working material around the hook one or more times. Crochet differs from knitting in that only one stitch is active at one time stitches made with the same diameter of yarn are comparably taller, and a single crochet hook is used instead of two knitting needles (Crompton, 2011).

Beads: A bead is a small, decorative object that is formed in a variety of shapes and sizes of a material such as glass, plastic, or wood, and that is pierced for threading or stringing. Beadwork is an art. Beads can be woven together with specialized thread, strung onto thread or soft, flexible wire, or adhered to a surface of fabric or clay (Brown, 2013).

Fringe: Fringe is an ornamental textile trim applied to an edge of an item, such as drapery, a flag, epaulettes, or decorative tassel. Fringe originates in the ends of the warp, projecting beyond the woven fabric. More commonly it is made separately and sewn on, consisting

sometimes of projecting ends, twisted or plaited together, and sometimes of loose threads of wool, silk, or linen, or narrow strips of leather (Zentgraf, 2013).

Embroidery: Embroidery is the handicraft of decorating fabric or other materials with needle and thread or yarn. Embroidery may also incorporate other materials such as metal strips, pearls, beads, quills, and sequins. Embroidery is available with a wide variety of thread or yarn colour. Embroidery comprises of stitches—chain stitch, buttonhole or blanket stitch, running stitch, satin stitch, cross stitch (Zieman, 2005)

Ribbon: A ribbon is a thin band of material, typically cloth but also plastic or sometimes metal, used primarily as decorative binding and tying. Cloth ribbons are made of natural materials such as silk, velvet, cotton, and jute and of synthetic materials, such as polyester, nylon and polypropylene. Ribbon is used for innumerable useful, ornamental and symbolic purposes (Schmidt, 2014).

Printing: Printing is a process for reproducing text and images using a master form or template. The earliest known form of woodblock printing came from China dating before 220 A.D. Printing is the process of applying colour to fabric in definite pattern or designs. In properly printed fabrics, the colour is bonded with the fibre, so as to resist washing friction.

Painting: Painting is the way of applying paint, pigment, colour or other medium to a surface. The paint is commonly applied to the surface with a brush or also with the help of other equipments such as knives, sponges and airbrushes. Painting is a mode of creative expression (Oroyan, 2001).

Mirror work: Indian mirror work, correctly called shishadur, most famously produced in balchistan (now in Pakistan) and is traditionally created by attaching small round pieces of silvered glass to the background fabric by a retaining wed of stitches around the circumference of the circle. Modern shisha embroidery employs tiny glass fragments, but in older pieces the mirrors were often more than 3 cm across (Stevens, 2007).

Patchwork: Patchwork is a form of needlework that involves sewing together small pieces of fabric and stitching them together into a larger design. These shapes are carefully measured and cut, basic geometric shapes making it easy to join it together.

Fullness: Fullness is creating interesting effects to the garment. The extra fullness is given in the form of pleats, gathers, ruffles, darts, tucks and smocking.

- **Pleat:** A pleat is a type of fold formed by doubling fabric back upon itself and securing it in place. Pleats include knife pleat, box pleat and inverted pleats.
- **Ruffles:** Ruffles are decorative fabric pieces that are gathered, pleated or otherwise fuller than the fabric to which they are attached. Ruffles can be single layer or double layer of fabric. Single layer ruffles have one edge attached or sewn with the opposite edge free. Double edged ruffles have two finished edges and are gathered or pleated down the centre then applied to the surface of the fabric (Kooler, 2009).
- **Gathers:** Gathering is a method of shortening the length of a strip of fabric so that longer piece can be attached to the shorter piece. In simple gathering, parallel rows of running stitches are sewn along one edge of the fabric and the stitching threads are then pulled or “drawn up” so that the fabric forms small folds along the threads.
- **Tuck:** A tuck is fold or pleat in fabric that is sewn in place. Tucks are also used to shorten a finished garment. When the tucks are very narrow, they are called pin tucks.
- **Dart:** A stitched fold of fabric, which usually tapers to a point. A dart is a means of suppression, which involves taking out fabric where you do not need it. They help to shape the garment, for example bust point and can be decorative (Prendergast, 2014).

Smocking: Smocking is an embroidery method used to gather the fabric so that it can stretch. Before elastic, smocking was commonly used in cuffs, bodies and necklines in the form of fitting and flexibility of the garment (Niekerk, 2013).

Knotting: Knotting is a decorative handicraft art that began in china. This is known as Chinese knotting. The knotting is done using cords, where two cords enter from the top of the knot and two cord leave from the bottom. The knots are usually double- layered and symmetrical (Belash, 2013).

3. METHODOLOGY

Methodology pertaining to a study on “**Developing and Assessing Eco-Fashion Handbags made of Water Hyacinth**” is discussed under the following headings.

2.1. Survey

- 2.1.1.** Selection of Tool
- 2.1.2.** Sample selection
- 2.1.3.** Conduct of the survey
- 2.1.4.** Analysis of Data

2.2. Design Development through sketching for handbags

- 2.2.1.** Preparation for Sketching
- 2.2.2.** Nomenclature
- 2.2.3.** Evaluation and Selection of Sketches

2.3. Preparation for handbag making

- 2.3.1.** Tools
- 2.3.2.** Natural fibre and Processing
- 2.3.3.** Fabric

2.4. Styles selected for constructing handbags

- 2.4.1.** CH2
- 2.4.2.** CH3
- 2.4.3.** DP13
- 2.4.4.** TB15
- 2.4.5.** TRB17

2.5. Evaluation of Samples

- 2.5.1.** Visual Inspection

2.6. Cost Estimation

3.1. SURVEY

The steps involved for conducting the survey are explained under the following heads:

3.1.1. Selection of Tool

Questionnaire is a device for securing answers to question using a form by which the respondents fill by themselves, reveals Gupta (2009). Questionnaire method was adopted for the collection of data. The questionnaire was formulated in order to elicit information about the preference towards the selection and purchase of handbags. The questionnaire was pretested and modified as required. Thus finalized questionnaire is presented in Appendix-i.

3.1.2. Selection of sample

Sample is a part of the population which one selects for the purpose of investigation, reveals Dutt, (1998). And according to Gupta (2005), samples may achieve much response rate and higher co-operation in general when every element in a population has equal chances to be selected.

Kumar (2005) explains a sample is a subgroup of the population means sampling is a process of selecting a few (a sample) from a bigger group (the sampling population) to become the basis for estimating or predicting the prevalence of an unknown piece of information, situation or outcome regarding the bigger group.

There are different types of sampling techniques. According to Thejaswini (2014), Convenience Sampling is a non-probability sampling technique where subjects are selected because of their convenient accessibility to the researcher. This sample is used because it allows the researcher to obtain basic data and trends regarding the study without the complications of using a randomized sample and also useful in documenting a particular quality of a substance or phenomenon occurs within a given sample.

Thus the investigator planned to select the convenient method of sampling to gather information for the study as careful selection of sample will give good results. 100 respondents in the age group of 18-46 years was selected as subjects for the study which includes students, professors from Avinashiligam Institute for Home Science and Higher Education for Women, Coimbatore, employed women working as manager from G₄ threads, R.S Puram and MS Raja & Co, Katoor and self-employed women from Flair designer, R.S Puram and Top Look designer, R.S Puram.

3.1.3. Conduct of the survey

A good rapport was established with the subjects. Then the information was collected from the respondents with the help of the questionnaire.

3.1.4. Analysis of Data

Gupta (2009) explains that the data after collection has to be processed and analysed in accordance with the outline laid down for the purpose at the time of developing the research plan, by technically which implies editing, coding, classifying and tabulating the collected data, so that they are amendable to analyze by consolidating, tabulating and statistically.

Thus the investigator tabulated and analysed the collected data.

3.2. DESIGN DEVELOPMENT THROUGH SKETCHING FOR HANDBAGS

Fashion illustration is the communication of fashion that originates with illustration, drawing and painting. Fashion illustration has been around for nearly 500 years and there is need to translate an idea or image into a visual form. It shows the presence of hand and is said to be visual luxury (Kumar, 2010). Confidence in sketching can be achieved by drawing accessories, which will develop skills in rendering proportion, shape and perspective. Design ideas are best generated on large sheets of paper that shows development work and the thought processes involved; these will provide an overall representation of the collection and may prevent the designs from being lost (Lau, 2012).

Therefore the investigator developed designs for the handbags through manual sketching, which were selected based on the college girls' preferences. Sketches were made based on the latest trend and popular handbag styles. The handbag styles are categorised as clutch bag, bucket bag, hobo bag, shoulder bag, drawstring, tote bag, trapezoid bag, back pack styled bag and barrel bag.

3.2.1. Nomenclature

The details of nomenclature for the sketched handbags are presented in the Table I.

Table I Nomenclature

S.No	Particulars	Nomenclature
1.	Clutch Handbag	CH
2.	Bucket Handbag	BH
3.	Hobo Bag	HB
4.	Shoulder Handbag	SH
5.	Drawstring Pouch	DP
6.	Tote Bag	TB
7.	Trapezoid Bag	TRB
8.	Back Pack Handbag	BPH
9.	Barrel Bag	BB

3.2.2. Preparation for sketching

Totally 20 handbag sketches were made, according to the handbag styles categorised in the nomenclature. The sketches done for handbags are given in Plate I.

CH1, CH2, CH3, CH4, and CH5- These designed handbags are a clutch bag. The clutch is a small bag with no handles or strap. The clutches which were designed is in a hexagonal, elongated rectangle, bolster, snap frame and hobo shapes.

BH6 and BH7- These handbags were designed as a type of bucket bag. It is a shoulder bag shaped like a bucket with wide open at the top and oval or round flat bottom.

HB8, HB9 and HB10- These handbags were styled based on hobo bag. It is a crescent shaped shoulder bag which dips in the centre.

SH11 and SH12- These handbags fall under the category of shoulder bag. It has long shoulder strap or chain which hangs down till the knee or can be worn across the body.

DP13- This handbag is a type of drawstring pouch. Drawstring is a small pouch which has a cord woven through the opening together the top for closing.

TB14 and TB15- These handbags are a kind of tote bags. It is a medium sized square bag with a top opening and two handles.

TRB16 and TRB17- The handbags designed was a style trapezoid bag. It is a medium sized and 'A' line shaped handbag with two handles.

BPH18 and BPHH19- The bag designed was a back pack styled handbag. It is a bag with vertical double shoulder straps.

BB20- The designed shape of the handbag is a barrel bag. It is a horizontal, cylindrical purse with a zip top closure and two short handles.

3.2.3. Evaluation and Selection of sketches

The sketched designs were evaluated for estimation of the highest preferred model of handbags. The designs are ranked according to the preference of the subjects by displaying the manually sketches of the handbags. From their preference five handbag models was ranked highest which are named as CH2, CH3, DP13, TB15 and TRB17. Thus the sketches which are finally selected for construction of handbags are given in Plate II.

3.3. PREPARATION OF MATERIALS FOR HANDBAG MAKING

Different kinds of tools and materials are prepared and used for the experiments as follows

3.3.1. Tools

Different tools are chosen for later experimental work. Sewing machine, scissors, thread, measuring tape, and hand needle are the basic tool to make the handbag.

In addition, bodkin, tailors awl, fabric glue, hole punch, hammer and pliers are supplementary tools which help to insert cords, and to work with the rivets and eyelets. The magnetic closure; zippers are used to close the opening of the handbags.

3.3.2. Natural fibre and processing

Water hyacinth grows in all types of freshwaters. They vary in size from a few inches to over three feet tall. They have showy lavender flowers. Their leaves are rounded and leathery, attached to spongy and sometimes inflated stalks reveals Earle (1948). The reason for choosing the natural fibre, water hyacinth is because of its flexibility, sponginess and the shine on the fibre.



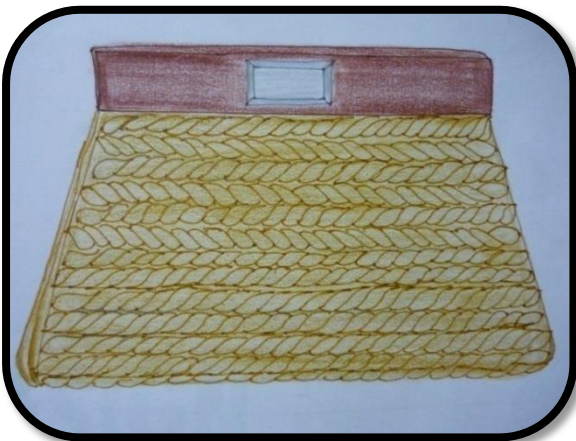
CH1



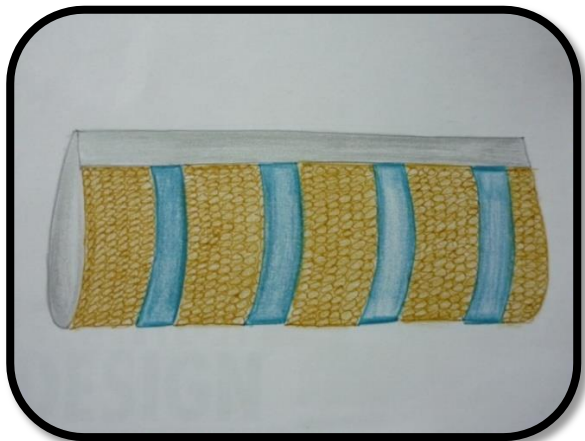
CH2



CH3



CH4



CH5

Plate I

Manual sketching for handbags



BH6



BH7



HB8



HB9



HB10

Plate I

Manual sketching for handbags



SH11



SH12



DP13



TB14



TB15

Plate I

Manual sketching for handbags



TRB16



TRB17



BPH18



BPH19



BB20

Plate I

Manual sketching for handbags



CH2



CH3



DP13



TB15



TRB17

Plate II

Selected style of handbags for construction

Water hyacinth was collected from the Ukkadam Valankulam Lake and the roots and the leaves are cut and separated from the stem, soon after that the stems are washed in water to clean off the dirt accumulated over them and next the stems are dried under the sun for 2-3 days. The dried stems of water hyacinth made flat with the help of roller. Water hyacinth is the main component in creating these handbags. The material used is given in Appendix-ii.



Plate III (a)
Water hyacinth in ukkadam lake



Plate III (b)
Collected water hyacinth stems



Plate III (c)
Cleant water hyacinth and left to dry



Plate III (d)
Flattening process



Plate III (e)
Flattened water hyacinth stem ready to be woven

3.3.3. Fabric

The lining material for the handbags should be lighter in weight and it should be as durable as the outer material of the bag. Thus the investigator selected cotton fabrics as the inner lining for the handbags because of its biodegradable property, easy availability and also gives a stiffer look. Jean material, printed cotton fabric, buckles, and draw strings are used for decorating the handbags. The materials used are given in Appendix-iii.

3.4. STYLES SELECTED FOR CONSTRUCTING HANDBAGS

3.4.1. CH2

The CH2, a trendy bolster clutch.

Materials: Water hyacinth, bamboo sticks, plain fabric, embroidered border, wooden disc, magnetic press button and fabric glue (Plate IV (a)).

Tools: Scissor and hammer.

The water hyacinth strips were pre-soaked in water and then used for weaving so that it becomes flexible and easy to weave. To prepare the CH2, a twining basketry weave technique is used. In this technique two or more flexible waving elements (water hyacinth) cross each other as they weave through the stiffer bamboo sticks which are cut to the required size and placed straight (Plate IV (b)). The wrong side of the finished water hyacinth mat were given lining with the plain fabric. The woven water hyacinth is stuck along the wooden disc to form a bolster shape. At the centre of the woven water hyacinth mat, embroidered border is attached for decoration. The edge of the wooden disc is covered using the braided water hyacinth (Plate IV (c)). The clutch was finished with magnetic closure at the centre. The finished of CH2 is shown in Plate IV (d).

3.4.2. CH3

The CH3, a stylised hand clutch bag is a good choice since the length of the water hyacinth is minimum.

Materials: Water hyacinth, card board, printed fabric, zipper, thread, magnetic press button, and fabric glue (Plate V (a)).

Tools: Scissor, hammer, sewing machine.

The cardboard is cut in the required shape. The strips of water hyacinth are arranged and stuck on the cardboard in vertical and horizontal direction and it was interlaced like plain weave pattern (Plate V (b)). The five strips of water hyacinth are braided and stuck to the base of the clutch for stiffness (Plate V (c)). The corners of the clutch are finished by giving a piping with the printed cloth. The clutch is finished with an inner lining and a zipper pouch stitched using sewing machine so that it can store things. The clutch was given a magnetic closure. The completed CH3 made by water hyacinth and printed fabric is shown in Plate V (d).

3.4.3. DP13

The DP13 is a beautiful and stylish drawstring pouch.

Materials: Water hyacinth, bamboo sticks, thread, printed fabric, embroidery thread, silk embroidery thread and fabric glue (Plate VI (a)).

Tools: Scissor, bodkin and sewing machine.

To prepare drawstring pouch using water hyacinth a twining basketry weave pattern is used. In this weave pattern the bamboo sticks are placed like the spokes of the wheel which are tied at the centre with the thread to stay still. The two or more flexible soaked water hyacinth stems are woven cross each other as they weave through the stiffer bamboo sticks as the base for the pouch (Plate VI (b)). The required circumference of the base for the drawstring is obtained, the bamboo sticks are bent towards the upper direction and the weave pattern continues to give a basket shape. The printed fabric the drawstring is stitched in the sewing machine in the size of the basket (Plate VI (c)). Using the hand embroidery thread a cord is made by braiding and the end of the drawstring cord is finished with tassel made from silk embroidery thread. Then this string is inserted through the fabric tube or casing so that the opening of the pouch could be drawn close. The finished pouch is stuck into the basket. The finished DP13, a drawstring pouch is shown in Plate VI (d).

3.4.4. TB15

The TB15 is a vintage style tote bag.

Materials: Water hyacinth, printed fabric, denim fabric, rivet, thread, inner lining fabric and fabric glue (Plate VII (a)).

Tools: Scissor, tailors awl, hammer and sewing machine.

The vintage style tote bag is designed using 2/2 twill pattern with water hyacinth strips (Plate VII (b)). After the required size of the bag is obtained, the sides and the base of the bag are finished with printed fabric and inner lining (Plate VII (c)). The denim fabric is used for handles and side detail. This denim handle and side detail are fixed to the bag with the help of the rivet. The completed tote bag TB15 is shown in Plate VII (d).

3.4.5. TRB17

The TRB17 is an elegant trapezoid bag.

Materials: Water hyacinth, printed fabric, denim fabric, magnetic press button, thread, wooden ring and fabric glue (Plate VIII (a)).

Tools: Scissors, hammer.

The Pre-soaked water hyacinth strips are tied to the wooden ring to a required circumference and length for making trapezoid bag. The other strips of water hyacinth are interlaced along the tied strips to form into a checked pattern to form a bag structure. The base of the bag is also woven with the help of water hyacinth and bamboo sticks to give a stiff and strong base (Plate VIII (b)). The denim fabric is given as a patch at the bottom and sides of the bag for decorative functional purpose printed fabric is wounded along wooden ring and a bow is given for decorative purpose (Plate VIII (c)). Then the inner lining is stitched and a magnetic closure is given to the bag. The finished trapezoid bag TRB17 is presented in Plate VIII (d).

3.5. EVALUATION OF SAMPLES

3.5.1. Visual inspection

The finished five samples were evaluated visually based on two criteria such as the first criteria includes size, shape, style, colour, weight and texture. The second criterion includes design, trimmings and decoration, overall appearance and reasoning of the cost. For the visual evaluation the judges were the students and professors from Avinashiligam Institute for Home Science and Higher Education for Women in Coimbatore. Along with them employed women working as manager in G₄ threads, R.S Puram and MS Raja & Co, Katoor and self-employed women from Flair designer, R.S Puram and Top Look designer, R.S Puram. Based on the criteria the judges evaluated the products individually. The results of the each product are presented in chapter-IV.

3.6. COST ESTIMATION

The cost of the constructed handbags was calculated and recorded according to the criteria such as cost of water hyacinth, fabric cost, fasteners cost, wooden handles and labour cost and was evaluated for its reasonability.



Plate IV (a)
Materials used



Plate IV (b)
Twining of the fibre



Plate IV (c)
The making process



Plate IV (d)
CH2-Finished Bolster clutch bag



Plate V (a)

Materials used



Plate V (b)

Interlacement of water hyacinth strips



Plate V (c)

The making process



Plate V (d)

CH3-Finished Hand clutch bag



Plate VI (a)
Materials used



Plate VI (b)
Twining of water hyacinth



Plate VI (c)
The making process



Plate VI (d)
DP13-Finished Drawstring pouch



Plate VII (a)
Materials used



Plate VII (b)
In twill weave pattern interlacement



Plate VII (c)
The making process



Plate VII (d)
TB15-Finished Tote bag



Plate VIII (a)
Materials used



Plate VIII (b)
Placement of fibre into the wooden ring



Plate VIII (c)
The making process



Plate VIII (d)
TRB17-Finished Trapezoid bag

4. RESULT AND DISCUSSION

The results pertaining to a study on “**Developing and Assessing Eco-Fashion Handbags made of Water Hyacinth**” are presented under the following headings:

4.1. Data Analysis and Interpretation of the responses

- 4.1.1. Age Group of the Respondents
- 4.1.2. Education
- 4.1.3. Occupation
- 4.1.4. Income level
- 4.1.5. Consumers purchasing behaviour
- 4.1.6. Awareness towards eco-friendly products
- 4.1.7. Secure environment with eco-friendly products
- 4.1.8. Purchasing products with environmental issues in mind
- 4.1.9. Consumers tendency to buy eco-friendly products
- 4.1.10. Consumers level of awareness towards the natural fibre made bags
- 4.1.11. Source of information in knowing water hyacinth bags
- 4.1.12. Consumers interest towards buying water hyacinth handbags
- 4.1.13. Factors considered in buying eco-handbags
- 4.1.14. Willingness of the consumers to pay more for eco-handbags
- 4.1.15. Consumers who think that quality of eco-friendly bags is better than conventional bags

4.2. Consolidated Rating of Sketching

4.3. Visual Inspection of Eco-Fashion handbags

4.4. Cost Estimation

4.1. DATA ANALYSIS AND INTERPRETATION OF THE RESPONSES

3.1.1. Age of the respondents

Age is an important factor to be considered in taking a good decision and execute the decision taken. The hundred female respondents who were interviewed for the study were classified into four groups namely below 25, 26-35, 36-45, and above 46. Table II and Figure 3 show the details of age group of the respondents.

Table II Age Group of the Respondents

Criteria	Frequency	Per cent (%)	Cumulative percent
Below 25	76	76	76
26-35	6	6	82
36-45	6	6	88
Above 46	12	12	100

From the Table II and Figure 3, it is clear that among 100 respondents 76% of them fall under the age group below 25, 12 % of the respondents were of above 46 age group, whereas 6% of the respondents fall under the age group of 26-35 and also between the age group 36-45 .

3.1.2. Education

Education is an important factor directly related to the awareness about the environmental factors in the surroundings. Education plays a vital role among women and has an influencing effect on their choices towards clothing and accessories. The educational status of the respondents is given in Table III and Figure 4.

Table III Educational status of the respondents

Criteria	Frequency	Percent (%)	Cumulative percent
Undergraduate	20	20	20
Post graduate	80	80	100

From the Table III and Figure 4 it is noted that among 100 respondents, a maximum of 80 % of the respondents are post graduates, whereas 20% of the respondents are at under graduate.

3.1.3. Occupation

Occupation is a factor that has to be considered which would help in knowing the liking of respondent. It is classified into four groups namely student, employed, self employed and professional. The various occupations of the respondents are discussed in Table IV and Figure 5.

Table IV Occupation of the respondents

Criteria	Frequency	Percent (%)	Cumulative Percent
Student	80	80	80
Employed	6	6	86
Self-Employed	4	4	90
Professional	10	10	100

From the Table IV and Figure 5, it is known that 80% of the respondents belong to student category, 10% of the respondents are professionals, 6% of them are employed, and the remaining 4% of them are self-employed.

3.1.4. Income level per month

Income is an essential factor to be considered because each and everything is based on the income of the respondent. The income of the respondents fall under the categories namely below Rs.15000/-, Rs.16000-25000/-, Rs. 26000-35000/- and above Rs.36000/-. The income level per month of the respondents is presented in Table V and Figure 6.

Table V Income of the respondents per month

Per month	Frequency	Percent (%)	Cumulative percent
Below Rs.15000	44	44	44
Rs.16000-25000	24	24	68
Rs.26000-35000	16	16	84
Above Rs.36000	16	16	100

From the Table V and Figure 6, it is clear that 44% of the respondents' monthly income is below Rs.15000. 24% of them earn an amount between Rs.16000-25000, 16% of the respondents earn between Rs.26000-35000 and 16% of the respondents' monthly income is above Rs.36000 respectively.

3.1.5. Consumers purchasing behaviour

It is an essential aspect to know the buying behaviour of the consumer in purchasing the conventional handbags and the details pertaining to this is presented in the Tables VI-XII and Figures 7-13.

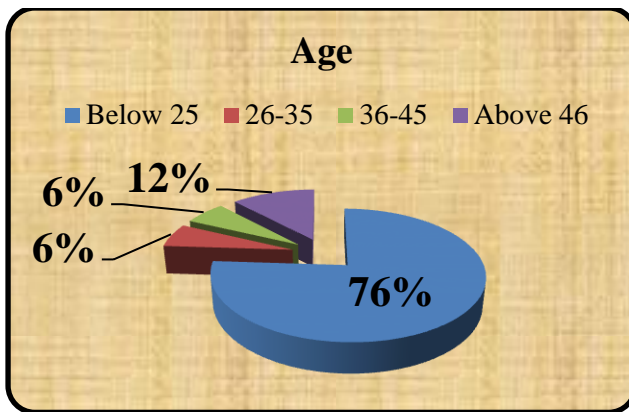


Figure 3

Age Group of the Respondents

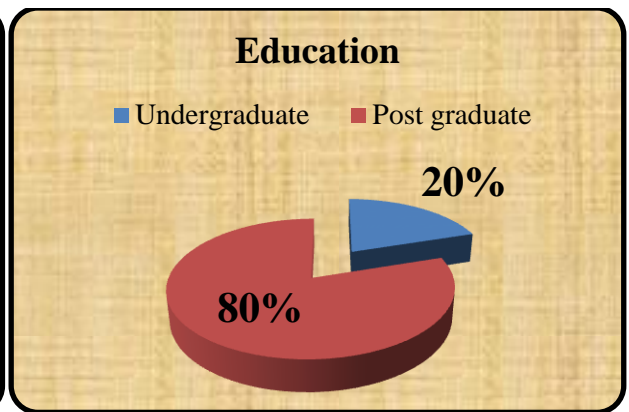


Figure 4

Educational status of the respondents

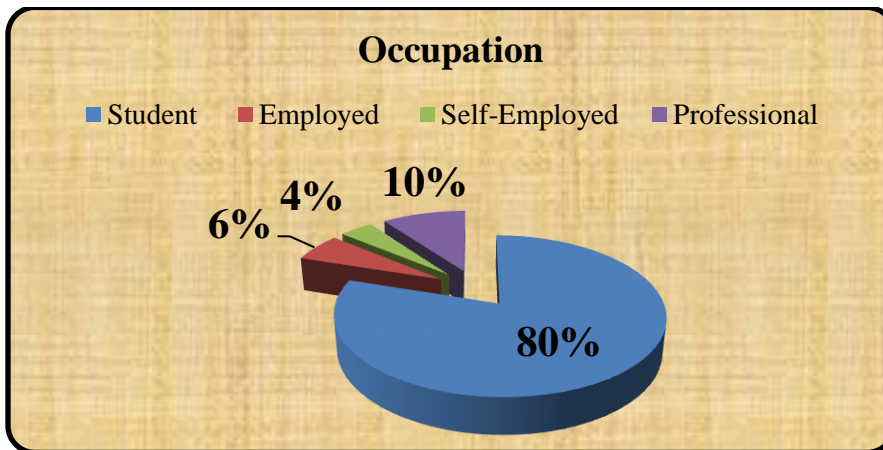


Figure 5

Occupation of the respondents

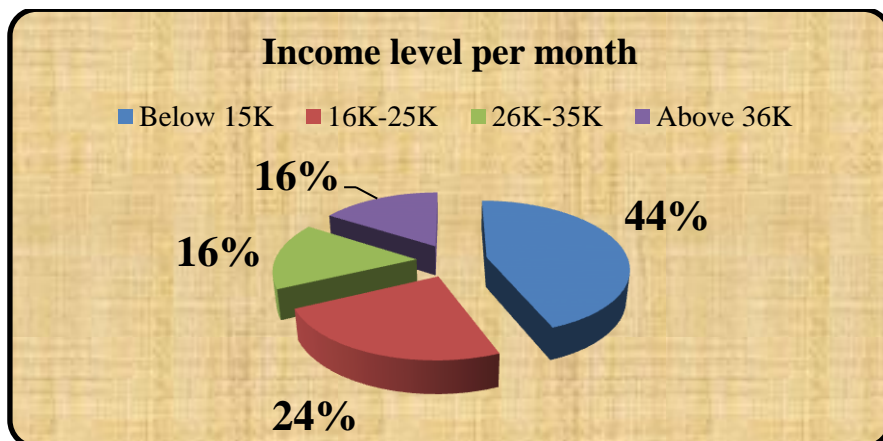


Figure 6

Income of the respondents per month

Table VI Opinion about Fashion

Opinion	Frequency	Percent (%)	Cumulative percent
Looking cool	34	34	34
Suitability	30	30	64
Looking sober & mature	8	8	72
A way to express my inner self	28	28	100

From the Table VI and Figure 7, it is known that nearly 34% of the respondents consider fashion as looking cool, 30% of them consider fashion as merely the suitability to individual, 28% of the respondents opinion was that fashion is a way to express their inner self while 8% want to look sober and mature.

Table VII Purpose of buying handbag

Purposes	Frequency	Percent (%)	Cumulative percent
A great companion	22	22	22
Trend	30	30	52
Appeal to personality	16	16	68
To carry small things	32	32	100

From the Table VII and Figure 8, it is understood that there are various purposes for buying the handbags by women. It is clear that a maximum of 32% of them buy it to carry small things, 30% of them buy handbags because it is in trend, 22% of the respondents consider handbag as a great companion, and the remaining 16% of the respondents buy handbags because it is appealing to their personality.

Table VIII Frequency of buying handbags

Criteria	Frequency	Percent (%)	Cumulative percent
Once in 3 months	20	20	20
Once in 6 months	20	20	40
Once in a year	34	34	74
Occasionally	26	26	100

From the above Table VIII and Figure 9, it is clear that 34% of the respondents buy it once in a year, 26% of the respondents buy handbags occasionally, whereas 20% of the respondents buy handbags once in 3 months and once in 6 months respectively.

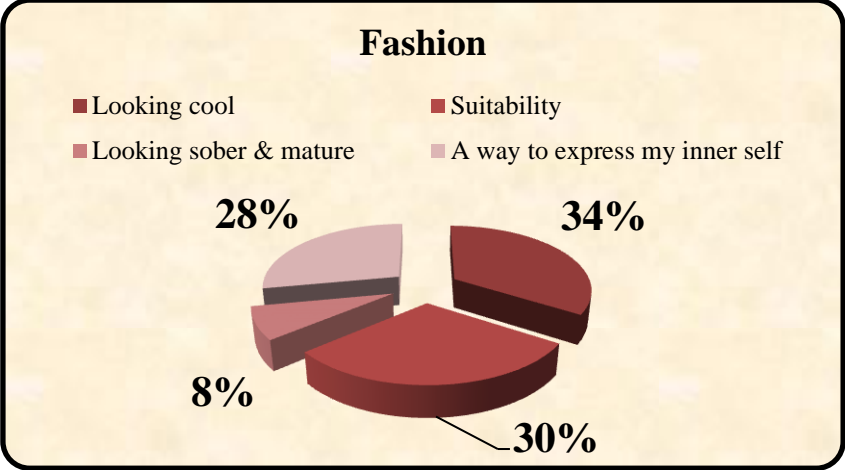


Figure 7

Opinion about Fashion

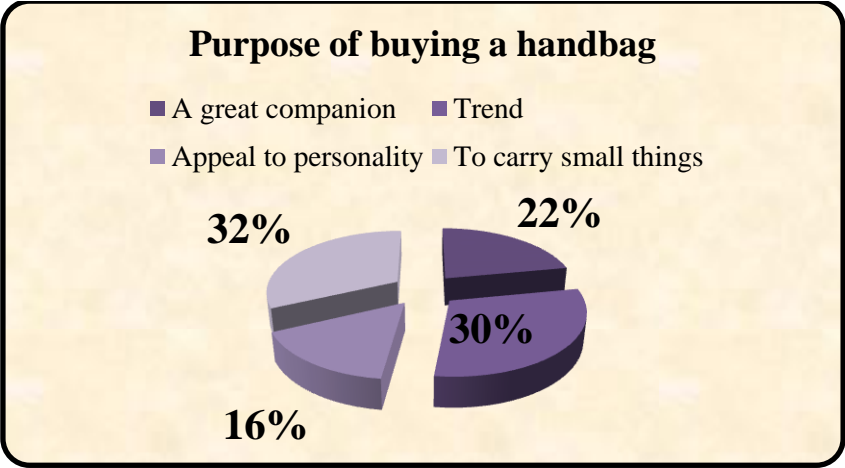


Figure 8

Purpose of buying a handbag



Figure 9

Frequency of buying handbags

Table IX Reason for buying handbag

Criteria	Frequency	Percent (%)	Cumulative percent
Shape/structure	18	18	18
Colour	14	14	32
Attractive patterns	40	40	72
Daily requirements	28	28	100

From the Table IX and Figure 10, it is evident a maximum of 40 % of the respondents buy bags for the attractive patterns in the handbags whereas 28% of the respondents buy handbags for their daily requirements, 18% of the respondents buy handbags for their shape and structure, and 14% of them buy for the colour of the handbags.

Table X Usage of handbag

Usage	Frequency	Percent (%)	Cumulative percent
6 months	36	36	36
A year	16	16	52
More than a year	4	4	56
As long it is fine	44	44	100

From the Table X and Figure 11, it is understood that a maximum of 44% of the respondents use the handbags till it is fine, the 36% of the respondents use it for 6 months, 16% of them use it for a year, and the remaining 4% of them use it for more than a year.

Table XI Amount spent for handbag

Amount in Rs	Frequency	Percent (%)	Cumulative percent
Rs.250-500/-	54	54	54
Rs.500-1000/-	26	26	80
Rs.1000-1500/-	18	18	98
Rs.1500/-&above	2	2	100

From the Table XI and Figure 12, it is clear that 54% of the respondents spend Rs.250-500, 26% of them spend Rs.500-1000, 18% of the respondent spend Rs.1000-1500 and 2% of the respondents spend Rs.1500 and above for handbags. Most of the respondents buy handbags between the price ranges of Rs. 250-500.

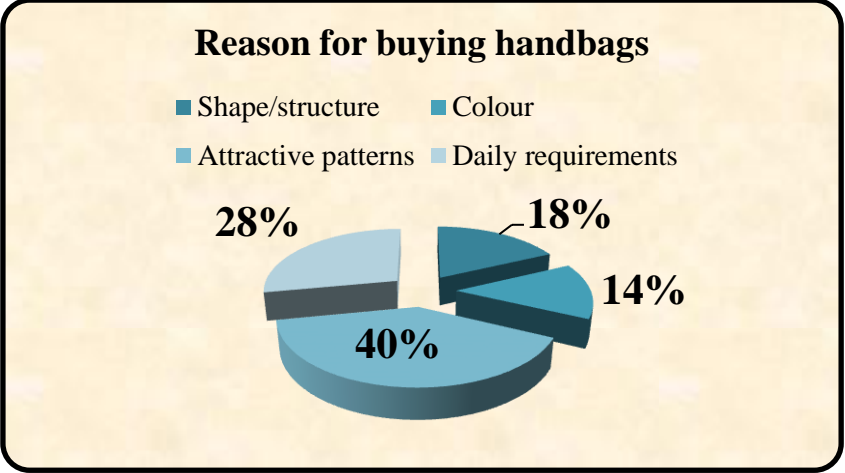


Figure 10



Figure 11

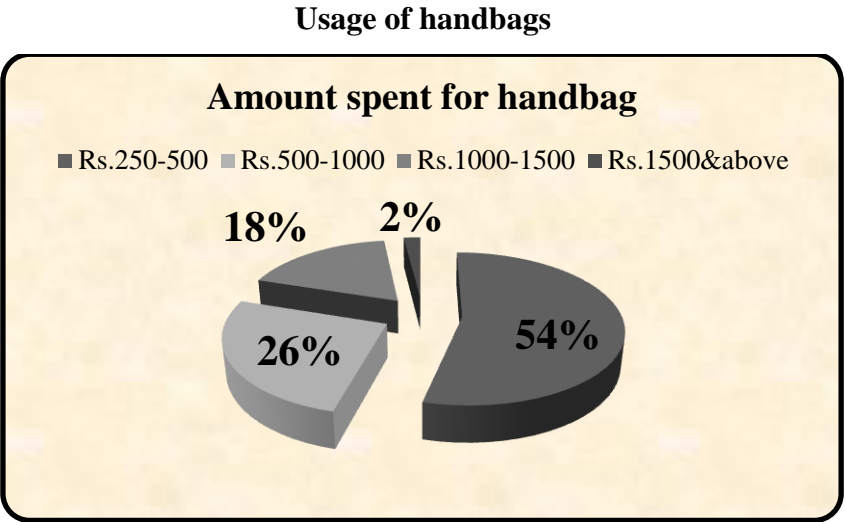


Figure 12

Amount spent for handbag

Table XII Material preference for handbag

Materials	Frequency	Percent (%)	Cumulative percent
Manufactured natural fabric	32	32	32
Manufactured synthetic fabric	8	8	40
Mixed content (natural & synthetic)	34	34	74
Eco-friendly fibres	24	24	98
Recycled fabric	2	2	100

From the Table XII and Figure 13, it is understood that 34% of the respondents prefer mixed content (natural and synthetic), 32% of the respondents prefer manufactured natural fabric (cotton, wool, silk, leather etc) for their handbags, 24% of the respondents prefer eco-friendly fibres, 8% of them prefer manufactured synthetic fabric (polyester, nylon, acrylic, viscose etc), and 2% of the respondents prefer recycled fabric for their handbags.

3.1.6. Awareness towards eco-friendly products

It is necessary to know the level of awareness of the consumers towards eco-friendly products. The Table XIII and Figure 14 show the level of awareness towards eco-friendly products.

Table XIII Awareness towards eco-friendly products

Awareness	Frequency	Percent (%)	Cumulative percent
Completely	50	50	50
Somewhat	40	40	90
Not known	10	10	100

From the Table XIII and Figure 14, it understood that nearly 50% of the respondents are aware of the eco-friendly products, 40% of the respondents are somewhat aware of the topic and 10% of the respondents are not aware of the eco-friendly products.

3.1.7. Secure environment with eco-friendly products

It is essential to know that whether the respondents are aware eco-friendly products which could help in saving the environment and will contribute to reduce pollution. Their level of awareness to secure environment with eco-friendly products is presented in Table XIV and Figure 15.

Materials Preference for handbag

- Manufactured natural fabric
- Manufactured synthetic fabric
- Mixed content (natural & synthetic)
- Eco-friendly fibres
- Recycled fabric

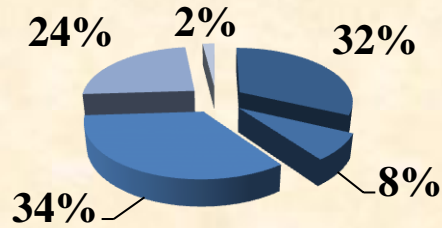


Figure 13

Materials Preference for handbag

Awareness towards eco-friendly products

- Completely
- Somewhat
- Not known

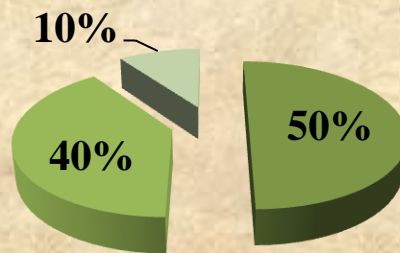


Figure 14

Awareness towards eco-friendly products

Secure environment with eco-friendly products

- Yes
- No

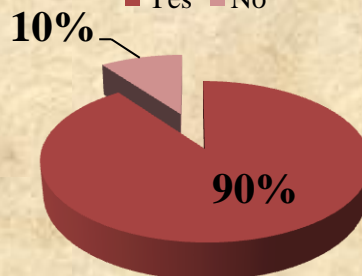


Figure 15

Secure environment with eco-friendly products

Table XIV Secure environment with eco-friendly products

Criteria	Frequency	Percent (%)	Cumulative percent
Yes	90	90	90
No	10	10	100

From the Table XIV and Figure 15, it is noted that 90% of the respondents are aware that the purchase of eco-friendly products will contribute in pollution control. But the other 10% of the respondents think that purchasing eco-friendly products done will not contribute any difference to the environmental pollution.

3.1.8. Purchasing products with environmental issues in mind

On considering the various environmental issues the respondents purchasing behaviour of the products are shown in Table XV and Figure 16.

Table XV Purchasing products with environmental issues in mind

Criteria	Frequency	Percent (%)	Cumulative percent
Yes	62	62	62
No	38	38	100

From the Table XV and Figure 16, it is clear that 62% of the respondents buy the eco-friendly products with environmental issues in mind. But the other 38% of the respondents do not buy eco-friendly products due to the five barriers in its way such as the lack of awareness, higher prices, low availability, distrust and negative perceptions as quoted by Bonini, Oppenheim, 2008.

Reasons for not buying the eco-friendly products are revealed in Table XVI and Figure 17.

Table XVI Perception on eco-friendly product buying

Reasons	Frequency	Percent (%)	Cumulative Percent
Reduced performance	6	15.7	15.7
Product appearance	10	26.3	42
Too expensive	14	36.8	78.8
Unaware of any such products	8	21.2	100

From the Table XVI and Figure 17, it is noted that 36.8% of them do not buy because it is too expensive for their cost of living, 26.3% do not buy because of the products appearance, 21.2% of the respondents are unaware of any such products available in the market and 15.7% of the respondents do not prefer eco-friendly products because of its reduced performance,. The prime reason for not buying eco-friendly product is that the product gets worn out very fast as it is made from natural and biodegradable. The consumers also feel that the product appearance is not so appealing; as the eco-friendly products might have some defects in them as it is handmade. As these products are handmade it becomes too expensive because of the labour work in it and few of the people are totally unaware of such products due to lack of communication and means of advertisement for the product (Mahanta, 2013).

3.1.9. Consumer’s tendency to buy eco-friendly products

Table XVII and Figure 18 shows the consumer’s tendency to buy eco-friendly products.

Table XVII Consumer’s tendency to buy eco-friendly products

Criteria	Frequency	Percent (%)	Cumulative percent
Yes	62	62	62
No	38	38	100

From the Table XVII and Figure 18, it is clear that a majority of 62% of the respondents expressed they would buy eco-friendly products, whereas 38% of the respondents opined that they will not buy eco-friendly products.

3.1.10. Consumer’s level of awareness towards the bags made out of water hyacinth

The level of awareness of the respondent towards the bags made out of water hyacinth is revealed in Table XVIII and Figure 19.

Table XVIII Awareness towards water hyacinth bags

Criteria	Frequency	Percent (%)	Cumulative percent
Aware	32	32	32
Not so aware	38	38	70
Not at all	30	30	100

From the Table XVIII and Figure 19, it is evident that a majority of 38% of the respondents are not so aware, whereas 32% of the respondents are aware of the bags made

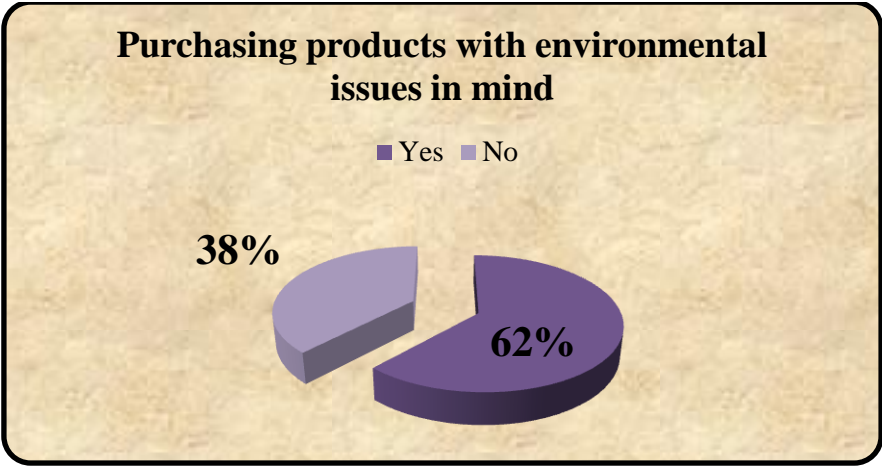


Figure 16

Purchasing products with environmental issues in mind

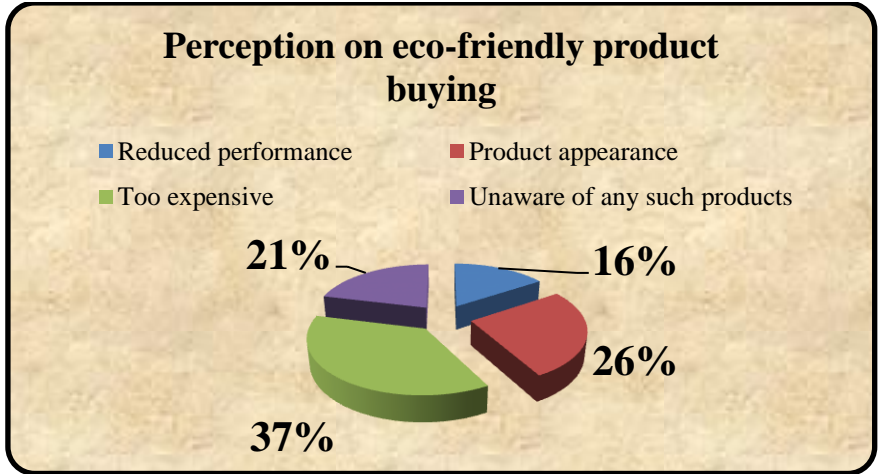


Figure 17

Perception on eco-friendly product buying

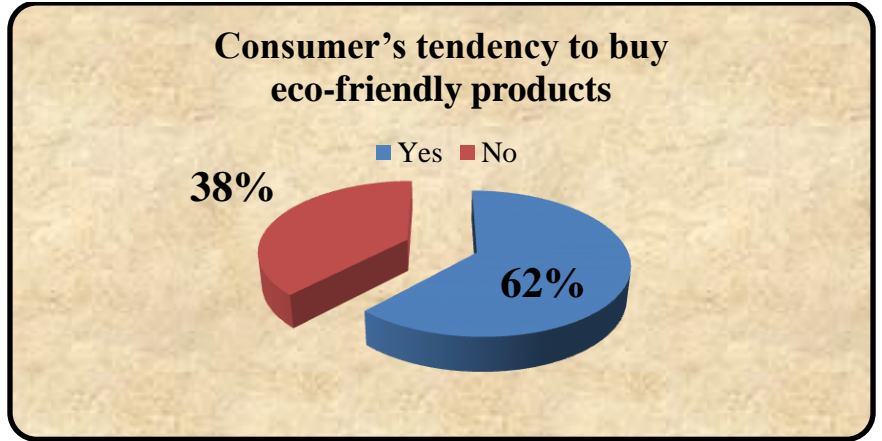


Figure 18

Consumer's tendency to buy eco-friendly products

out of water hyacinth, and the remaining 30% do not know about product the made out of water hyacinth.

3.1.11. Source of information in knowing water hyacinth bags

The various medium through which the information about the water hyacinth bags are known to the consumers are given in the Table XIX and Figure 20.

Table XIX Source of information in knowing water hyacinth bags

Source	Frequency	Percent (%)	Cumulative percent
Internet	17	24.3	24.3
Family/friends	20	28.6	52.9
Exhibitions	18	25.7	78.6
Municipal projects	0	0	78.6
Newspapers/Magazines	15	21.4	100

From the Table XIX and Figure 20, it is noted that family and friends are the most popular means of giving information, 28.6% of the respondents knew the information through word of mouth from their family and friends, 25.7% of them knew about the bags made of water hyacinth from exhibition, nearly 24.3% of the respondents got information from internet, and the remaining 21.4% of the respondents knew from the newspapers and magazines.

3.1.12. Consumer's interest towards buying water hyacinth handbags

The Table XX and Figure 21 show the consumer's interest in buying the water hyacinth handbags.

Table XX Interest towards buying water hyacinth handbags

Criteria	Frequency	Percent (%)	Cumulative percent
Yes	88	88	88
No	12	12	100

From the Table XX and Figure 21, it is understood that among 100 respondents 88% of them will prefer buying water hyacinth handbags, but the remaining 12% of the respondents will not prefer buying handbags made of water hyacinth.

3.1.13. Factors considered in buying eco-handbags

Factors to be considered by the manufacturers while designing an eco- handbag. The Table XXI and Figure 22 show the factors to be considered in buying eco-handbags.

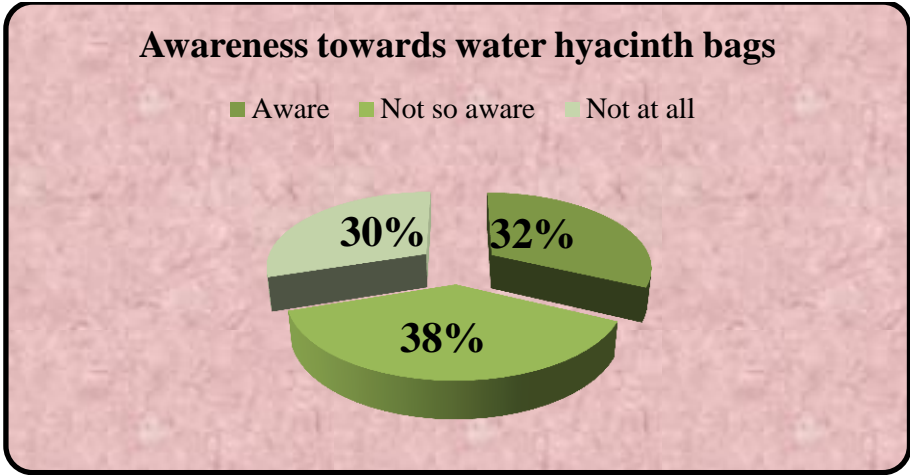


Figure 19

Awareness towards water hyacinth bags

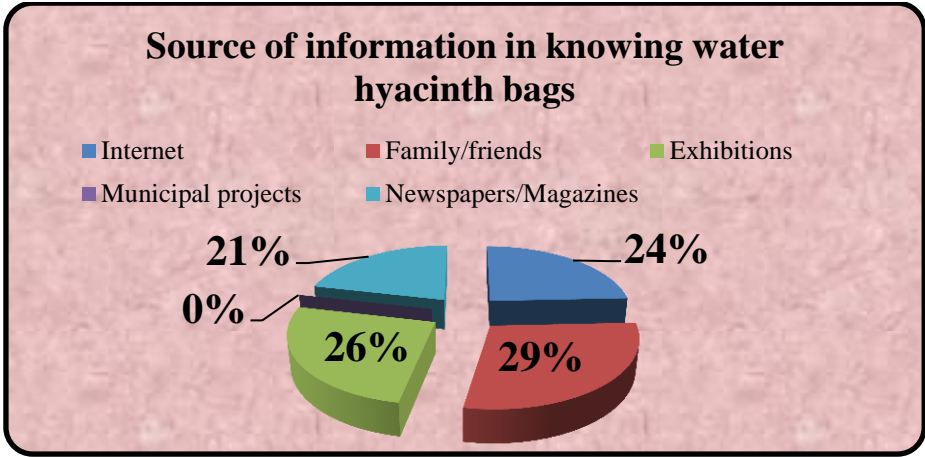


Figure 20

Source of information in knowing water hyacinth bags

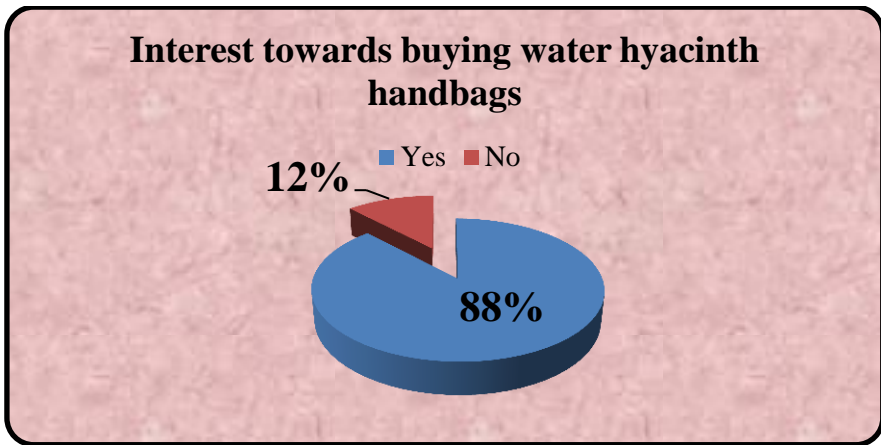


Figure 21

Interest towards buying water hyacinth handbags

Table XXI Factors considered in buying eco-handbags

Factors	Frequency	Percent (%)	Cumulative percent
Expensive	25	25	25
Higher durability	22	22	47
Very cheap but valuable	23	23	71
Eco-consciousness	30	30	100

From the Table XXI and Figure 22, it is clear that 30% of the respondent prefer the bags to be eco-conscious, 25% of the respondents prefer the product to be expensive in order to get a better eco-handbags, whereas 23% of them want it to be very cheap but valuable, and the remaining 22% of the respondents prefer the handbag to be highly durable.

3.1.14. Willingness of the consumers to pay more for eco-handbags

The willingness of the consumers to pay for the eco-handbags is revealed in the Table XXII and Figure 23.

Table XXII Willingness of the consumers to pay more for eco-handbags

Criteria	Frequency	Percent (%)	Cumulative percent
0%	2	2	2
1%-5%	54	54	56
6%-10%	26	26	82
11%-20%	12	12	94
Above 30%	6	6	100

From the Table XXII and Figure 23, it is clear that only 54% of the respondents are willing to pay 1-5% more for eco-handbags, whereas 26% of them would pay 6-10% more for the eco-handbags, while 12% of the respondents are willing to pay 11-20% more and just 6% of the respondents are willing to pay above 30% more for the eco-friendly handbags and 2% of the respondents are not willing to pay more for the eco-handbags.

3.1.15. Quality of eco-friendly bags is better than conventional bags

The Table XXIII and Figure 24 portrays the perception about the quality of eco-friendly bags over conventional bags.

Table XXIII Quality of eco-friendly bags is better than conventional bags

Criteria	Frequency	Percent (%)	Cumulative percent
Yes	74	74	74
No	26	26	100

From the Table XXIII and Figure 24, it is known that 74% of the respondents think that the quality and the performance of the eco-friendly bags is better, but the remaining 26% of the respondents think that conventional bags are better than eco-friendly bags.

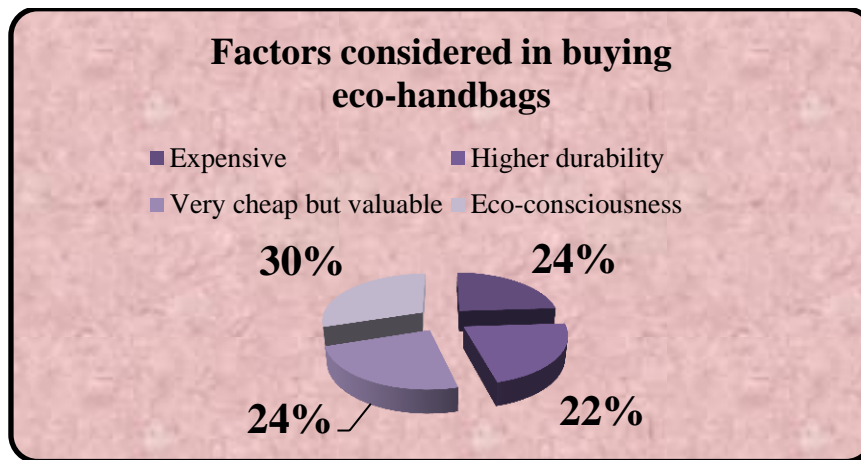


Figure 22

Factors considered in buying eco-handbags

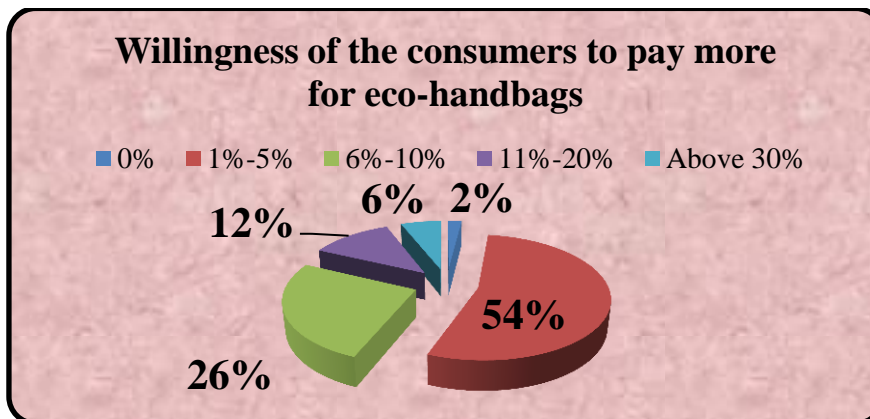


Figure 23

Willingness of the consumers to pay more for eco-handbags

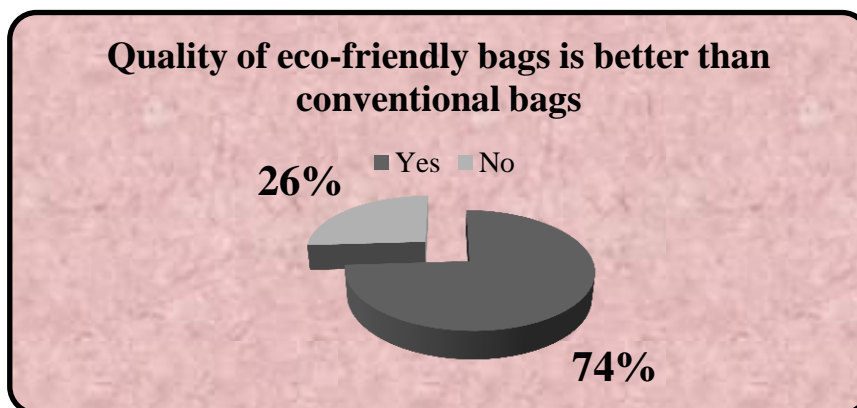


Figure 24

Quality of eco-friendly bags is better than conventional bags

4.2. CONSOLIDATED RATING OF SKETCHING

Consolidated rating of sketching is presented under the Table XXIV.

Table XXIV Consolidated rating of sketching

S.No	Design code	Excellent	Good	Fair
1	CH1	60.5	25.2	14.3
2	CH2	86.2	10.4	3.4
3	CH3	90.3	9.7	-
4	CH4	66.6	30.0	3.4
5	CH5	71.4	23.5	5.1
6	BH6	60.1	20.7	19.2
7	BH7	76.6	10.0	13.4
8	HB8	73.3	26.7	-
9	HB9	70.0	26.6	3.4
10	HB10	59.0	25.5	15.5
11	SH11	72.4	20.0	7.9
12	SH12	55.2	34.4	10.4
13	DP13	94.6	5.4	-
14	TB14	75.7	14.5	9.8
15	TB15	88.4	11.6	-
16	TRB16	65.1	34.9	-
17	TRB17	86.6	11.1	2.3
18	BPH18	63.9	18.7	17.4
19	BPH19	52.8	35.2	12.0
20	BB20	73.2	23.7	3.1

From the Table XXIV, it is known that the maximum rating of 94.6 per cent was noted for the design DP13 as excellent followed by the designs CH3 (90.3 per cent), TB15 (88.4 per cent), TRB17 (86.6 per cent), CH2 (86.2 per cent). The designs namely CH5, BH7, HB8, TB14, SH11, BB20 were rated to be excellent for general appearance by 70-80 per cent of judges. The designs CH1, CH4, BH6, HB9, TRB16, and BPH18 were rated to be excellent by 60-70 per cent of judges. And the design HB10, SH12 and BPH19 were rated to be excellent for the general appearance by 50-60 per cent of the judges. Hence it could be

concluded that five designs namely CH2, CH3, DP13, TB15, and TRB17 possess excellent general appearance.

4.3. VISUAL INSPECTION OF ECO-FASHION HANDBAGS

The result of the visual inspection of eco-fashion handbags is presented in two criteria under the Table XXV and Table XXVI.

Table XXV

Visual Inspection of Eco-Fashion handbags in First Criteria

S.No	Sample	Size			Shape		Style		Colour		Weight			Texture		
		Small	Medium	Large	Good	Bad	Modern	Traditional	Warm	Cool	Light	Medium	Heavy	Smooth	Medium	Rough
1	CH2	-	100	-	100	-	98	2	100	-	100	-	-	100	-	-
2	CH3	-	100	-	100	-	22	78	100	-	100	-	-	98	2	-
3	DP13	15	85	-	100	-	25	75	100	-	100	-	-	100	-	-
4	TB15	-	20	80	100	-	100	-	-	100	10	90	-	75	25	-
5	TRB17	78	22	-	100	-	100	-	55	45	23	77	-	85	15	-

Table XXV shows the result of the first criteria of visual inspection of eco-fashion handbags based on the six criteria. Five samples have different grades of satisfaction between different criteria. They are as follows:

Size

This criterion aims to evaluate the size of the handbags. Size is categorized as small, medium and large. The maximum of 100 per cent judges rated the samples CH2 and CH3 as medium sized bags. Followed by the sample DP13 that is rated as medium by 85 per cent of the judges and the remaining 15 per cent of the judges felt that the size is small. The sample TB15 is rated to be large size bag by 80 per cent of; whereas the remaining 20 per cent judges felt that the size is medium. The sample TRB17 is sized small by 78 per cent of the judges, whereas the remaining 22 per cent of the judges felt that the size is medium.

Shape

This criterion aims to evaluate the shape of the handbags. Shape is categorized as good and bad. The maximum of 100 per cent judges rated the sample CH2, CH3, DP13, TB15 and TRB17 as good shape.

Style

This criterion aims to evaluate the style of the handbags. Style is categorized as modern and traditional. The sample CH2 is styled as traditional by 78 per cent of the judges, whereas 22 per cent of the judges felt that the handbag is modern in style. The sample CH3 that is rated as modern in style by 98 per cent of judges and the remaining 2 per cent of the judges felt it is a traditional style. For the sample DP13, 75 per cent of the judges rated as traditional in style while 25 per cent of the judges rated it to be modern style of handbag. Followed by the maximum of 100 per cent judges rated the samples TB15 and TRB17 as modern style of handbag.

Colour

This criterion aims to evaluate the colour of the handbags. Colour is categorized as warm colour and cool colour. The maximum of 100 per cent of the judges rated the sample CH2, CH3 and DP13 as warm colour. While for sample TB15 that is rated as cool colour by maximum of 100 per cent of the judges. Followed by 55 per cent of the judges rated the sample TRB17 as warm colour, whereas 45 per cent of the judges felt it as cool colour.

Weight

This criterion aims to evaluate the weight of the handbags. Weight is categorized as light, medium and heavy. The maximum of 100 per cent of the judges rated the sample CH2, CH3 and DP13 as light weight. While the sample TB15 is rated as medium in weight by 90 per cent of the judges, whereas 10 per cent of the judges felt that it as light weight. Followed by 77 per cent of the judges rated the sample TRB17 as medium weight, whereas 23 per cent of the judges felt that it is light weight bag.

Texture

This criterion aims to evaluate the texture of the handbags. Texture is categorized as smooth, medium and rough. The sample CH2 is rated with 98 per cent for its smooth texture, while 2 per cent of the judges rated it as medium texture. The maximum of 100 per cent of the judges rated the sample CH3 and DP13 as smooth textured bag. Followed by the sample TB15 that is rated as smooth texture by 75 per cent of the judges, whereas 25 per cent of the judges felt that the texture of the bag as medium. And the sample TRB17 is textured as smooth by 85 per cent of the judges, whereas the remaining 15 per cent of the judges felt that the texture of the handbag is medium.

Table XXVI**Visual Inspection of Eco-Fashion handbags in Second Criteria**

S.No	Selected handbag		Design				Trimmings and Decorations				Overall Appearance				Cost	
	Sample code	Cost (Rs.)	Ex	VG	G	F	Ex	VG	G	F	Ex	VG	G	F	R	NR
1	CH2	400/-	98	2	-	-	89	11	-	-	98	2	-	-	100	-
2	CH3	550/-	90	10	-	-	72	18	10	-	95	5	-	-	100	-
3	DP13	350/-	80	15	5	-	92	8	-	-	90	10	-	-	100	-
4	TB15	500/-	98	2	-	-	85	15	-	-	98	2	-	-	100	-
5	TRB17	400/-	85	10	5	-	95	5	-	-	89	11	-	-	100	-

Table XXV shows the result of the second criteria of visual inspection done by the judges of five samples based on the four criteria. Five samples have different grades of satisfaction between different criteria. All criterions were evaluated as follows:

Design

This criterion aims to evaluate the design. Comparing the other three samples, the sample CH2 and TB15 have been rated as excellent by 98 per cent of the judges, followed by the sample CH3 with 90 per cent rating and the samples DP13 and TRB17 were rated to be excellent by 85 and 80 per cent of the judges.

The samples DP13, CH3, SH17, CH2 and TB15 were rated very good with 15, 10, 10, 2 and 2 per cent by the judges. The samples DP13 and TRB17 were rated as good by 5 per cent of the judges.

Trimmings and decorations

This criterion aims to evaluate the trimmings and decorations. When compared to the other four samples, the sample TRB17 has been rated as excellent by maximum number of 95 per cent judges. This was followed by the sample DP13, CH2, TB15 and CH2 with the rating of excellent by 92, 89, 85 and 70 percentages respectively.

The sample CH3, TB15, CH2, DP13 and TRB17 were rated as very good by the judges with 18, 15, 11, 8 and 5 percentages respectively, and followed by the sample CH2 which is rated as good by 10 per cent of the judges.

Overall Appearance

This criterion aims to evaluate the overall appearance. Comparing the other three samples, the samples CH2 and TB15 were rated as excellent by the maximum number of 98 per cent judges. This was followed by the sample CH3, DP13 and TRB17 with the rating of excellent by 95, 90 and 89 percentages respectively.

The sample TRB17, DP13, CH2, CH3 and TB15 were rated as very good by the judges with 11, 10, 5, 2 and 2 percentages respectively.

4.4. COST ESTIMATION

The cost estimation is presented in Table XXVII.

Table XXVII Cost Estimation

S.No	Handbag code	Particulars	Cost (Rs.)	Total cost (Rs.)
1	CH2	Water hyacinth Fabric cost Fasteners Labour cost	200 70 10 270	550
2	CH3	Water hyacinth Fabric cost Fasteners Labour cost	100 80 10 210	400
3	DP13	Water hyacinth Fabric cost Fasteners Labour cost	100 80 10 160	350
4	TB15	Water hyacinth Fabric cost Fasteners Labour cost	100 130 10 260	500
5	TRB17	Water hyacinth Fabric cost Wooden handle Labour cost	100 100 70 130	400

From the Table XXVII it is clear that the cost estimation of the samples CH2, CH3, DP13, TB15 and TRB17 is Rs. 400, Rs. 550, Rs. 350, Rs. 500 and Rs. 400. The judges revealed that the cost of five handbags made out of water hyacinth in terms of costing is reasonable.

5. SUMMARY AND CONCLUSION

INTRODUCTION

“Eco-friendly” and “green” are terms referred to as several things, indicating such as renewability, sustainability, energy efficiency, and non-toxicity, being minimally invasive, having a reduction in carbon footprint, and having a reduction in CO₂ emissions. Green product refers to the products that incorporate the strategies in recycling or with recycled content, reduced packing or using less toxic material to reduce the impact on the natural environment. In recent days, fabric can be made from organic cotton, bamboo, banana fibre, hemp, indigo and wool.

Eco-friendly products are readily available nowadays. These include small articles from handmade paper bags, jute bags and recycled paper to eco-friendly fuels and natural fibre. Natural fibre industries employ millions of people all over the world, especially in the developing countries. These help in preventing damage to our surrounding from harmful materials. The development of green product has a long way to go, as it has barriers in its way such as the lack of awareness, negative perception, distrust, high prices and low availability. Understanding these barriers is the first step to growing green consumers. Knowing what stops consumers from buying green products is only half the battle. The other half is knowing how to break down these barriers. These barriers can be broken down by educating the consumers, build better products, be honest, offer more of the eco-products, bring products to the people so that consumers would intend to buy them.

Several celebrities and designers have recently drawn attention to socially-conscious and environmentally-friendly fashion. It has become increasingly evident that there has been a noticeable shift in the collective consciousness regarding our escalating environmental issues.

Considering the above facts, the investigator decided to carry out a study on **“Developing and Assessing Eco-Fashion Handbags made of Water Hyacinth”** with the following objectives.

- To examine the level of awareness of the consumers about eco-friendly products.
- To sustain the eco-fashion concept in designing handbags.
- To construct and evaluate selected eco-handbags.

METHODOLOGY

- To examine the level of awareness of the consumers about the eco-friendly product a survey was conducted. Questionnaire method was adopted for the collection of data. The questionnaire is formulated in order to elicit information about the preference of the respondents towards the selection and purchase of handbags.
- The convenient method of sampling is used to gather information for the study as careful selection of sample would give good result. Hundred respondents in the age group of 18-46 years was selected as subjects for the study which includes students, professors from Avinashiligam Institute for Home Science and Higher Education for Women, Coimbatore, employed women from G₄ threads, R.S Puram and MS Raja & Co, Katoor and self-employed women from Flair designer, R.S Puram and Top Look designer, R.S Puram.
- A questionnaire was framed with information such as the socioeconomic status, buying behaviour of consumer when purchasing conventional handbags, awareness towards eco-friendly products, tendency to buy eco-friendly product, level of awareness towards natural fibre made bags, source of information in knowing about bags made of water hyacinth, factors considered while buying eco-handbags.
- To sustain the eco-fashion concept, water hyacinth stems was taken into consideration. Water hyacinth grows in all types of freshwaters. They vary in size from a few inches to over three feet tall. They have lavender flowers. Their leaves are rounded and leathery, attached to spongy and sometimes inflated stalks. The reason for choosing the natural fibre, water hyacinth is because of its flexibility, sponginess and the shine on the fibre.
- Water hyacinth was collected from the Ukkadam Valankulam Lake and the roots and the leaves are cut and separated from the stem, soon after that the stems are washed in water to clean off the dirt accumulated over them and next the stems are dried under the sun for 2-3 days. The dried stems of water hyacinth made flat with the help of roller. Water hyacinth is the main component in creating these handbags.
- The texture of water hyacinth was used for rendering the designs sketched for handbags. Sketches were made based on the latest trend and popular handbag styles. The handbag styles are categorised as clutch bag, bucket bag, hobo bag, shoulder bag, drawstring, tote bag, trapezoid bag, back pack styled bag and barrel bag.

- The manual sketching was done for 20 handbags. Then the designs were ranked according to the preference of the respondents by displaying the manually sketched designs. From their preferences, 5 designs were selected for construction namely CH2, CH3, DP13, TB15 and TRB17.
- The tools and the materials required for the construction of handbags such as bodkin, tailors awl, fabric glue, hole punch, hammer and pliers were used. The magnetic closure and zippers were also used to close the opening of the handbags.
- Finally selected handbags were constructed using the required materials. The lining material for the handbags should be lighter in weight and it should be as durable as the outer material of the bag. Therefore the investigator selected cotton fabrics as the inner lining for the handbags because of its biodegradable property, easy availability and also gives a stiffer look. Jean material, printed cotton fabric, buckles, and draw strings are used for decorating the handbags.
- The pattern was put according to the size and the requirement of the handbags.
- The CH2 is a trendy bolster clutch which was given a twining pattern using dried water hyacinth stems and at the centre of the clutch was given a beautiful embroidered lace.
- The CH3 is a stylish hand clutch which was given a checked pattern using dried water hyacinth stems and is bordered with a warm yellow cotton material.
- The DP13 is a beautiful and stylish drawstring pouch which was also given a twining pattern using dried water hyacinth stems. In this sample, the base was made out of water hyacinth to make bottom stiff and for drawstring, a beautiful yellow cotton material is used.
- The TB15 is beautiful and vintage style tote bag, in which the major part was given a twill pattern using water hyacinth stems and the rest of the area i.e., the base and the sides were finished with geometric patterned green cotton material and a blue jean material was used for handles.
- The TRB17 is an elegant trapezoid bag, in which the upper portion and the base of the bag was woven using water hyacinth stems and the rest of the area was covered with jean material. The wooden handles of the bag was rolled with a yellow cotton material and was given a pretty bow along the handle.
- The finished five samples namely CH2, CH3, DP13, TB15 and TRB17 were evaluated visually based on two criteria. The first criterion includes size, shape, style,

colour, weight and texture and the second criterion includes design, trimmings and decoration, overall appearance and cost.

- The finished handbags were evaluated by the students and professors from Avinashiligam Institute for Home Science and Higher Education for Women in Coimbatore, employed women working as manager in G₄ threads, R.S Puram and MS Raja & Co, Katoor and self-employed women from Flair designer, R.S Puram and Top Look designer, R.S Puram.

FINDINGS OF THE STUDY

The findings of the study are given below:

- The education plays an important role in the awareness towards the environmental issues being faced by the society. The maximum (80 per cent) of the respondents were post graduates. Seventy six per cent of the respondents were in the age group of below 25.
- The eighty per cent of the respondents were students who preferred tote, hand clutch and bolster clutch style of bags, whereas ten per cent of professional category of respondents preferred hand clutch and bolster clutch style of handbags, while six per cent of the employed women opted for the trapezoid and hand clutch style of bags and only four per cent self- employed women preferred drawstring pouch, and trapezoid style of bags. Occupation is also a main aspect in the buying behaviour of the consumer towards eco-friendly handbags.
- Factors considered by the respondents towards conventional bag purchasing are as follows: Opinion about fashion was looking cool by 34 per cent of respondents' and 32 per cent of respondent's purpose of buying a handbag is to carry the small things which they use. The frequency of buying a handbag by 34 per cent of respondents' was once in a year. The reason for buying a handbag by 40 per cent respondents' was due to its attractive patterns and 44 per cent of respondents' use their handbags till it is fine. While the amount of money spent on a handbag by 54 per cent respondents' were between Rs. 250-500 /-. Thirty four per cent preferred material for their handbag was mixed content of both natural and synthetic fabric.
- The level of awareness of the respondents was 50 per cent towards the availability of eco-friendly products. A maximum of 90 per cent of respondents' were aware that eco-friendly products could help in saving the environment. Sixty two per cent of

respondents' were purchasing the products keeping in mind the environmental issues around us. The perception for not buying eco-friendly products by 36.8 per cent of respondents' was due to its higher prices.

- The 62 per cent respondents' are ready to buy eco-friendly products. Thirty eight per cent) of respondents' were not so aware of the bags made out of water hyacinth. The source of information about the bags made of water hyacinth was passed on to a 28.6 per cent of respondents' through family and friends.
- Eighty eight per cent of the respondents are interested towards buying bags made from water hyacinth. Factor that should be considered by the manufacturer while designing eco-handbags are that it should be eco-conscious according to the 30 per cent of the respondents. Fifty four per cent of respondents' are willing to pay 1%-5% more for the eco-handbags and 74 per cent of respondents' think that the quality of the eco-friendly bags will be better than conventional bags.
- The five designs namely CH2, CH3, DP13, TB15 and TRB17 were rated as excellent. In the first criteria of visual inspection of the bags, a maximum number of judges felt that the size of the bags were medium, good in shape, modern in style, warm in colour, light in weight , and smooth in texture of the handbags. In the second criteria of visual inspection, CH2 and DP13 were rated as excellent for their design by the judges, TRB17 was rated as excellent for their trimmings and decorations and CH2 and TB15 were rated as excellent for their overall appearance by the judges respectively.
- Then the cost of constructed handbags was estimated, this was evaluated by the judges' and a maximum of them felt it is reasonable and can be bought by all the income level of the respondents.

CONCLUSION

It could be concluded that the respondents' are aware of the eco-friendly handbags which are available in the market. Though they are aware of the eco-friendly handbags, they do not purchase them because of the higher price of the handbags. If at all the price level of the products come under their budget they would prefer buying the eco-handbags. However the respondents appreciated the effort taken towards designing and making of the handbags made out of water hyacinth. The handbags thus made are eco-friendly, fashionable and can be

used along with casual and party wear garments. They are moderately priced and could be priced less if more number of bags are made.

LIMITATION

- Processing of water hyacinth fibres require more time.
- Uniform thickness is the constrain while weaving.

RECOMMENDATION

- Combination of natural fibres could be tried for bag making.
- Training in natural fibre based bag making can be given to rural women as an income generation activity.

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Appendix-i

QUESTIONNAIRE TO ELICIT INFORMATION ABOUT PREFERENCES TOWARDS ECO-FASHION HANDBAGS

- 1) Name of the interviewer :
- 2) Name of the interviewee :
- 3) Sex : [M] [F]
- 4) Age : [Below 25] [26-35] [36-45] [Above 46]
- 5) Education : [Undergraduate] [Post graduate]
- 6) Occupation : [Student] [Employed] [Self-employed]
[Professional]
- 7) Income (per month) : [Below 15K] [16k-25K] [26K-35K] [Above 36K]
- 8) Fashion to you is?
 - a. Looking cool
 - b. Suitability
 - c. Looking sober & mature
 - d. A way to express my inner self
- 9) What is the purpose of buying a handbag?
 - a. A great companion
 - b. Trend
 - c. Appeal to personality
 - d. To carry small things
- 10) How often do you buy handbags?
 - a. Once in 3 months
 - b. Once in 6 months
 - c. Once in a year
 - d. Occasionally
- 11) What makes you to buy a handbag?
 - a. shape / structure
 - b. colour
 - c. Attractive patterns
 - d. Daily requirements
- 12) How long do you use a handbag?
 - a. 6 months
 - b. a year
 - c. More than a year
 - d. As long it is fine
- 13) How much do you spend for your handbag?
 - a. Rs. 250 - 500
 - b. Rs.500-1000
 - c. Rs. 1000- 1500
 - d. Rs.1500 & above
- 14) What kind of material do you prefer in your handbags?
 - a. Manufactured Natural fabrics
(E.g. cotton, wool, silk, leather etc)
 - b. Manufactured synthetic fabric
(E.g. polyester, nylon, acrylic, viscose)
 - c. mixed content (both a& b)
 - d. Eco-friendly fibres
(E.g. bamboo, water hyacinth)
 - e. Recycled fabric

15) Are you aware of eco-friendly products?

- a. completely b. somewhat c. not known

16) Do you think that purchasing eco-friendly products will contribute to pollution reduction?

- a. Yes b. No

17) Have you bought or considered buying products which are designed with environmental issues in mind?

- a. Yes b. No

If No, specify

- a. Reduced performance b. Product appearance c. Too expensive
d. Unaware of any such products

18) Have you ever used eco-friendly handbags?

- a. Yes b. No

Water hyacinth (ஆகாயத் தாமரை) is an attractive floating aquatic plant with shiny green leaves and delicate lavender flowers. It is an easily renewable plant that dries to a soft and strong fiber.

19) Are you aware of water hyacinth handbags?

- a. Aware b. Not so aware c. Not at all

If so how

- a. Internet b. Family/friends c. Exhibitions
d. Municipal projects e. Newspapers/Magazines

20) Will you prefer buying products made out of water hyacinth?

- a. Yes b. No

21) Do you have any expectation on eco-design handbags?

- a. Expensive c. Very cheap but valuable
b. Higher durability d. Eco-consciousness

22) How much can you pay more for eco-friendly handbags?

- a. 0% b. 1%-5% c. 6%-10%
d. 11%-20% e. above 30%

23) Do you think that the quality of the eco-friendly handbags is better than conventional handbags?

- a. Yes b. No

Appendix-ii

FIBRE USED FOR HANDBAG



Water Hyacinth Fibre

Appendix-iii

FABRIC DETAILS



Yellow printed fabric



Green printed fabric



Denim fabric



Embroidered fabric

Appendix-iv

VISUAL INSPECTION OF ECO-FASHION HANDBAGS IN FIRST CRITERIA

S.No	Sample	Size			Shape		Style		Colour		Weight			Texture		
		Small	Medium	Large	Good	Bad	Modern	Traditional	Warm	Cool	Light	Medium	Heavy	Smooth	Medium	Rough
1	CH2															
2	CH3															
3	DP13															
4	TB15															
5	TRB17															

Appendix-v

VISUAL INSPECTION OF ECO-FASHION HANDBAGS IN SECOND CRITERIA

S.No	Selected handbags		Design				Trimmings and Decorations				Overall Appearance				Cost	
	Sample code	Cost (Rs.)	Ex	VG	G	F	Ex	VG	G	F	Ex	VG	G	F	R	NR
1	CH2															
2	CH3															
3	DP13															
4	TB15															
5	TRB17															

Ex- Excellent

VG-Very Good

G-Good

F-Fair

R-Reasonable

NR-Not Reasonable