

**“A STUDY ON CONSUMER SATISFACTION
TOWARDS ORGANIC SUGAR WITH SPECIAL
REFERENCE TO IDUKKI DISTRICT”**

In Partial Fulfilment of the Requirement for the Degree of
MASTER OF COMMERCE.

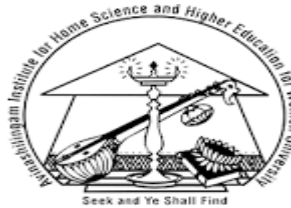
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Department of Commerce

**AVINASHILINGAM INSTITUTE FOR HOME SCIENCE AND HIGHER EDUCATION
FOR WOMEN**

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DECLARATION

DECLARATION

I hereby declare the work entitled““**A STUDY ON CONSUMER SATISFACTION TOWARDS ORGANIC SUGAR WITH SPECIAL REFERENCE TO IDUKKI DISTRICT**” is submitted in partial fulfilment of the requirement for the award of the Degree of Master of Commerce under the guidance of **Dr.M KAVITHARANI (Assistant Professor).**

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CERTIFICATE

CERTIFICATE

This is to certify that the project entitled, “**A STUDY ON CONSUMER SATISFACTION TOWARDS ORGANIC SUGAR WITH SPECIAL REFERENCE TO IDUKKI DISTRICT**” is a bonafide record of work done by **M.KAVYA(22PCO024)** Submitted in fulfilment of the requirements on **MASTER OF COMMERCE**.

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ACKNOWLEDGEMENT

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CHAPTER - I

INTRODUCTION

1. SUGARCANE

Sugarcane industry, sugar extraction is a critical step since all the succeeding stages of ethanol, sugar and electricity productions are directly dependent on this process. Moving-bed diffusers are the main alternative equipments to the traditional extraction process by crushing mills.

In those alternative equipments, a stage-base extraction is performed by the percolation of water through a moving-bed of shredded cane. The sugar withdrawal in this process may be represented, essentially, by two mass transfer mechanisms occurring at the same time (Rein, 2013).

Lixiviation is the faster mechanism, in which sugar is removed from open-cells on the surface of sugarcane fibers. The second mechanism is a diffusional extraction of sugar either from intact cells or from inside of fiber pockets.

The mathematical description of this process is complex mainly due to the heterogeneous nature of the sugarcane bed. The existence of a reliable mathematical model would be an important, useful tool to assist professionals in the project of new moving-bed diffusers and in the optimization of operational paths of existing equipments as observed in early seventies (Rein, 1972).

Nowadays the existence of such mathematical model is even more necessary thanks to the costs of energy and process sustainability. A process simulator would make the mathematical models readily available to be used in the daily routine of sugarcane mills. In fact, a simulator would guide the design and the operation of full-scale equipments in order to achieve high extraction standards.

Particularly on the current Brazilian industrial scenario, the development

of such simulator would play an important role since there are a growing number of new and restructured factories that began to use diffusers. Despite the remarkable contribution that a simulator may represent to the entire

sugar/ethanol sector, there is a lack of recent works on mathematical modelling and virtually none experience on development of simulators for diffusers.

Enhancing the studies in this field allows promoting more detailed technical evaluation to build a suitable simulation tool. Ready-to-use commercial platforms could be considered, but high price licenses would be a key bottleneck limiting the availability of the simulator.

Bearing all these in mind, in this project a simulator of a moving-bed diffuser was developed to be used in any typical computer facility of sugar cane industrial units for ethanol, sugar e electricity production. The results of the simulation tool are the Brix curve (soluble solids content in the liquid leaving each stage of a diffuser) and the Brix profile within the bed.

The Brix curve is the main indicative of extraction performance applied by the sugarcane mills. In turn, Brix profile is a new approach proposed to assess extraction through the analysis of the sugar distribution.



1.1 ORGANIC SUGAR

Sugar has been produced in India since ancient times and then it spread to other parts of the world. Sugarcane is a native of tropical Indian subcontinent and Southeast Asia.

In India, sugarcane is planted thrice a year in October, March and July depending on part of the country. Most of the sugar production in India takes at local Cooperative Sugar mills. After gaining Independence, India made serious plans for overall industrial development of sugar industry.

Organic Brown sugar is a type of sugar (sucrose) that gains a brown colour due to the presence of molasses. Organic Brown sugar can either be commercially or naturally produced, with the former made by molasses being added to traditional white sugar, composing between 4% and 7% of the final product. The average brown sugar contains about 5% molasses by weight.

Brown sugar is made from white sugar crystals that have been combined with molasses. Brown sugar is basically just white sugar with molasses added back into it. You can make your own brown sugar at home by heating white sugar in a saucepan until it melts, then adding some molasses to it and mixing it together. Brown sugar is simply white sugar mixed with molasses. Sugar gets its colour from molasses and this is why brown sugar has a deeper, richer colour than white sugar. Brown sugar has a more intense flavour than white sugar and can be used as a substitute for white sugar in recipes.

Organic brown sugar is healthier than white sugar and is a great alternative to regular sugar. Organic brown sugar is one of the best things you can use to make your coffee taste great. Brown sugar is great as a facial scrub. Mix it with some honey and olive oil to create a scrub that will exfoliate and hydrate your skin.

Brown sugar is a type of sugar that has been refined from sugar cane or sugar beet, and has been processed with heat to remove the molasses. Brown sugar comes in two varieties: light brown sugar and dark brown sugar. Light brown sugar has a slightly different flavour than white sugar, but it's less sweet. Brown sugar has a lower glycaemic index than white sugar, which means it

doesn't spike your blood sugar as much so you don't get that sugar crash. Brown sugar is also great for your skin, because it contains small amounts of vitamins and minerals like foliate, magnesium, and iron. Brown sugar is a great natural exfoliate and because it's not as harsh as other types of sugar, it's kinder to skin and can be used more frequently. Brown sugar is also an anti-inflammatory, so it can be used to treat acne, rosacea, and eczema.

- Brown sugar cane is a sweetener taken from the plant *Saccharin officinarum*.

- Brown sugar is considered to be healthier than refined white sugar because it contains some beneficial nutrients.

- The nutrients found in brown sugar include iron, calcium, magnesium, zinc, and potassium. Brown Sugar has a lower glycaemic index than white sugar, and can be substituted 1:1 in recipes. Brown sugar can be used on your skin in the same way you'd use sugar. You can mix brown sugar with any other natural ingredient to make a scrub for your body and face, or even just to use as an exfoliate on your lips.



1.2 SUGARCANE HARVEST MACHINE

A sugarcane harvester is a large piece of agricultural machinery used to harvest and partially process sugarcane.

The machine, originally developed in the 1920s, remains similar in function and design to the combine harvester. Essentially a storage vessel on a truck with a mechanical extension, the machine cuts the stalks at the base, strips the leaves off, and then cuts the cane into segments.

These are then deposited into either the on-board container, or a separate vehicle traveling alongside. Waste material is then ejected back onto the field, where it acts as fertilizer.



1.3 SUGAR PROCESSING

• Harvesting

Sugar cane and sugar beets are typically harvested from fields mechanically. The harvested plant materials are frequently sieved to remove dirt and rocks before being loaded onto trucks and taken to the factory for processing.

Juice Extraction.

The sugar cassettes are pumped into the bottom of 10- to 20-meter-tall tanks. A rotating shaft in the centre transports the sugar beet strips upwards against the downward flow of water as the sugar is extracted. For sugar cane, milling is used to extract the juice.

A series of five mills compresses the sugar cane fibres and separates the juice from the bagasse, which can be used later as a fuel source. The initial juice is dark green in colour and is acidic and turbid. The juice is collected in large vats and the sugar concentration is measured.



• Purification of Juice

Tall towers, 10 to 20 meters high, are used to purify and lighten the colour of the cane juice. The juice is introduced at the top of the tower and sulphur dioxide vapour is introduced at the bottom. The sulphur dioxide rises up through the tower in a process called suffixation.

Gas is added at 120 to 200 pounds per million pounds of juice. Carbonation or alkalization is used to further separate the soluble non-sugar materials from the sugar juice. Carbonation employs calcium carbonate or calcium sulphite to aid in precipitation. The juice is heated to denature the protein content and is then mixed with slurry of calcium hydroxide, called milk of lime.

Carbon dioxide gas bubbles can also be introduced in this step to lower the alkalinity and precipitate the carbonation sludge, which is filtered to purify the juice.

The clarification process typically takes several hours. At the end, the sludge is removed from the bottom of the tank and the juice is removed from the top. Secondary filtration is used to extract any remaining sugar from the sludge. This produces a material called mud, which can be used later to fertilize fields.

The clarified juice is then boiled in a series of vacuum evaporators until it reaches a concentration of 50%–65% sugar. Each subsequent evaporator in the series has a higher vacuum pressure than the previous evaporator, resulting in the sugar syrup boiling at progressively lower temperatures as it moves through the process. Sediment is skimmed off the top of the evaporators using paddle skimmers, producing thick, nearly colourless sugar syrup.



• **Crystallization**

During the next step in the manufacturing process, a single-stage vacuum pan is used to evaporate the syrup until it is saturated with sugar crystals, which are formed through a process called seeding. A milky solution of pure sucrose suspended in alcohol and glycerine is the seed that is slowly added to the syrup. The small grains of sugar present in the solution serve as nuclei, helping to draw out the sugar in solution and convert it into crystals. As the mixture is boiled in a vacuum pan, water evaporates and sugar crystals continue to grow into a paste called massecuite, a dense mixture of syrup and sugar crystals. This mixture is then transferred into a large container called a crystallizer, where the massecuite is slowly stirred and cooled, continuing the crystallization process.



- **Centrifugation**

To separate the massecuite into sugar crystals and molasses, the massecuite is added to a high-speed centrifuge. The centrifuge, which rotates at 1,000 to 2,800 revolutions per minute, contains a perforated metal cylindrical basket. During centrifugation, the molasses passes out of the lined centrifuge basket and is drawn to the outside of the centrifuge where it is removed and sent to storage tanks. The sugar is retained in the lined centrifuge basket. Spring water is used to wash the crystals as they are centrifuged.



- **Drying and Packaging**

The damp sugar crystals are dried in large, hot air dryers, reaching a moisture content of as low as 0.02%. Next, the sugar is gently tumbled through heated air in a granulator. The dried crystals are then separated into different sizes through vibrating screens and placed into storage bins. Finally, the sugar is packaged for the consumer.

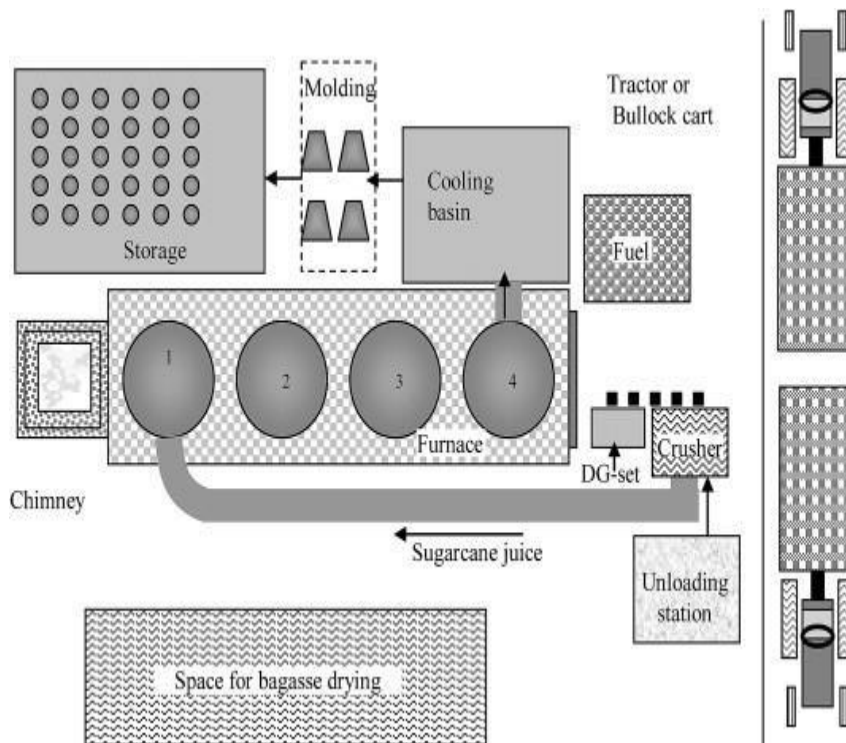
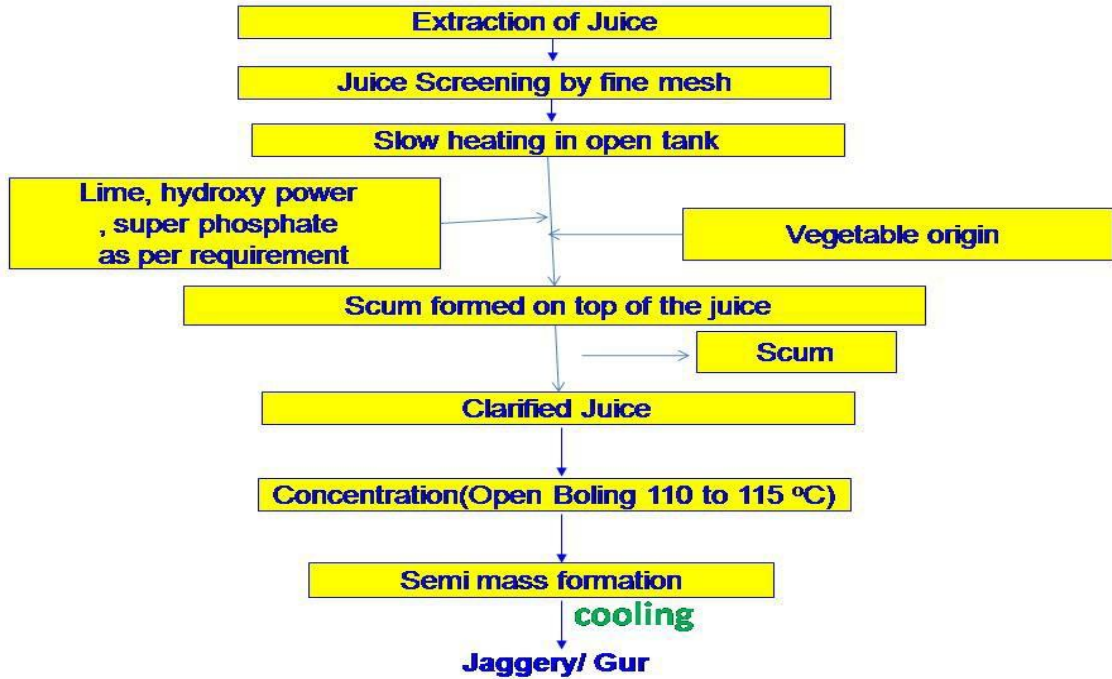
There are many different types of organic sugar, but they all start out life as sugar beet or sugarcane. In fact, all sugar in shops and food products come from either beet or cane, whether it's organic or non-organic. Cane is a far more common source of organic sugar: the global production of all organic sugar is around 540,000 tonnes, but only 94,000 tonnes of that is from beet.

After farming and harvesting organic sugar beet and sugar cane, how is it processed and refined? While beet and cane sugars have different journeys from field to crystal, organic versions are processed and refined in the same way as non-organic versions.

There are strict rules about separating organic and conventional crops for the journey from field to end product.



Flow chat for Jaggery Manufacturing process



1.4 PRODUCT QUALITY AND REQUIREMENT

The most common parameters used to measure product quality are moisture, colour, granulation, sediment, and ash. Moisture. Moisture is usually determined by a vacuum oven-dry method at 80°C. Moisture levels of more than 0.05% are likely to lead to caking or lumping problems which can make storage and transfer of bulk sugar difficult.

The usual standard is 0.03%, which manufacturers can easily meet. Care must be taken to avoid temperature differentials in storage which cause moisture to migrate and establish pockets of unacceptably high moisture levels. Colour is usually specified as white and measured as a solution colour using the specific absorbance at 420 nm. If the measurement is made on a filtered (0.45 µm) solution, it is reported as International Commission for Uniform Methods of Sugar Analysis (ICUMSA) units. More commonly, a second transmittance reading is taken at 720 nm, a turbidity correction made, and the result reported in Reference Basis Units (RBUs).

Turbidity can also be used as a quality parameter. Using either scale, sugar begins to be noticeably off-white at about 50 units. The upper limit is usually 35 units, which corresponds to a straw-coloured solution at 50% solids. High colour in sugar is a harbinger of other problems such as foaming, off-odors, cloudiness or floc, or generally poor performance in production which is why many customers who use sugar in highly collared or opaque products insist on low colour sugar.

Granulation is important to customers who do not want too much dust (fines), lumps, or grittiness, and/or who have a very specific need to mix the sugar with other dry ingredients or to turn it into a fondant. Customers in the latter categories are willing to pay a premium for specially screened sugar. Beet sugar is commonly produced with crystal sizes in the 0.400 mm range with a coefficient of variation of 25–30%.

The size distribution is determined on a stack of three to eight sieves of decreasing sizes using U.S. Sieve values for reference. Sediment is most commonly used as an operational check of filter efficiency and leakage,

although some customers, especially those who intend to melt the sugar into clear solutions, write sediment restrictions.

The measurement is normally done by passing the 50% solution used for the colour determination through a half black–half white filter pad and visually counting the white and black specks. This can be determined by a gravimetric method using sulphuric acid to digest the sugar followed by burning in a muffle oven at 650°C. Measuring conductivity on the 50% solution and then referencing this value to the sulphated ash.

1.5 IMPORTANCE OF ORGANIC SUGAR

Unfortunately, sugar has a bad rap in the health and fitness community. However, a little-known fact remains that while the quantity of sugar consumption can impact your health, it is also the quality of the sugar that makes a world of difference. Thus, you are less likely to put your health at risk if you were to consume better quality sugar in controlled amounts

Organic sugar health benefits go way beyond satisfying your sweet cravings. Following are the lesser-known organic sugar health benefits:

1.Organic Sugars do not Contain Pesticides:

The greatest and most well-known organic sugar health benefits lie in the fact that they do not contain any pesticides. Sugarcane is highly susceptible to parasitic attacks by termites, grasshoppers, whiteflies, etc. At the same time, red rot, smut, weeds can also affect the yield and hamper with the sugar extraction procedure.

2.They Possess Higher Nutritional Value

At the surface, sugar is sugar.100 grams of sugar contains 99.6 grams of carbohydrates sourced from sugar. However, when you compare raw, organic cane sugar with refined sugar, you will notice that the former contains additional vitamins (A, B1, B2, B6, C) and minerals, such as sodium, calcium, magnesium, and iron. Moreover, it is packed with amino acids that make it a healthier alternative. On the other hand, refined sugar only contains sucrose and

glucose, while its organic equivalent will retain some fructose along with sucrose and glucose.

3. Enhanced Flavour Profile

You can count on organic sugar health benefits along with an enhanced flavour profile. Regular refined sugar undergoes several multi-step processes that include chemicals like sulphur dioxide, calcium hydroxide, and phosphoric acid. While refined organic sugar may also go through several stages of refining, it does not involve chemical treatment, which offers a full-bodied flavour that makes it taste slightly better. On the other hand, raw organic cane sugar will retain some of its flavours due to the presence of molasses. The molasses syrup offers the sugar a characteristic caramelised texture that makes it perfect for baking.

4. Treatment of Diseases

In alternative medicines like Umami or Ayurveda, sugarcane and sugarcane juice is said to have therapeutic properties. However, processing it eliminates these qualities. Thus, raw organic cane sugar is the best substitute for raw sugarcane juice. Due to its high carbohydrate and iron content, it may be used to treat febrile disorders, fever, fatigue, anaemia, inflammatory diseases, ulcers, and intestinal issues. Moreover, the oligosaccharides present in organic sugar strengthen your immune response and supplies sufficient amounts of antioxidants to the body.

5. Low Carbon Footprint

Making an environmentally-conscious choice is one of the many organic sugar health benefits that one may overlook. Farmers that practise organic farming not only produce healthier crops but also achieve it through eco-friendly practices. Organic farming reduces pollution and helps prevent soil erosion or water wastage. Thus, you can consume organic products with a clear conscience. Cutting off sugar entirely may not be a healthy choice. Thus, rather than focusing on ways to eliminate sugar, one should try to focus on incorporating better quality sugar. So while organic sugar may not be a super food, it is definitely worth your investment!

Organic Brown sugar is a type of sugar (sucrose) that gains a brown colour due to the presence of molasses. Organic Brown sugar can either be commercially or naturally produced, with the former made by molasses being added to traditional white sugar, composing between 4% and 7% of the final product. The average brown sugar contains about 5% molasses by weight.

Brown sugar is made from white sugar crystals that have been combined with molasses. Brown sugar is basically just white sugar with molasses added back into it. You can make your own brown sugar at home by heating white sugar in a saucepan until it melts, then adding some molasses to it and mixing it together. Brown sugar is simply white sugar mixed with molasses. Sugar gets its colour from molasses and this is why brown sugar has a deeper, richer colour than white sugar. Brown sugar has a more intense flavour than white sugar and can be used as a substitute for white sugar in recipes.

Organic brown sugar is healthier than white sugar and is a great alternative to regular sugar. Organic brown sugar is one of the best things you can use to make your coffee taste great. Brown sugar is great as a facial scrub. Mix it with some honey and olive oil to create a scrub that will exfoliate and hydrate your skin.

Brown sugar is a type of sugar that has been refined from sugar cane or sugar beet, and has been processed with heat to remove the molasses. Brown sugar comes in two varieties: light brown sugar and dark brown sugar. Light brown sugar has a slightly different flavour than white sugar, but it's less sweet. Brown sugar has a lower glycaemic index than white sugar, which means it doesn't spike your blood sugar as much so you don't get that sugar crash. Brown sugar is also great for your skin, because it contains small amounts of vitamins and minerals like foliate, magnesium, and iron. Brown sugar is a great natural exfoliate and because it's not as harsh as other types of sugar, it's kinder to skin and can be used more frequently. Brown sugar is also an anti-inflammatory, so it can be used to treat acne, rosacea, and eczema.

- Brown sugar cane is a sweetener taken from the plant *Saccharin officinarum*.

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1.6 BENEFITS OF ORGANIC BROWN SUGAR

The health benefits of organic brown sugar include its ability to boost energy levels, prevent cold, treat uterine infections, improve digestion, reduce flatulence, and aid in weight loss, just to name a few. Let us discuss them in detail below.

Organic brown sugar has a lot of health benefits too. It's rich in minerals such as iron, calcium and manganese. The minerals in it are easily absorbed by the body, which makes brown sugar an excellent alternative to processed sugar. Organic brown sugar is the secret to making a perfect cappuccino. When you bake, you want to add brown sugar to your recipe in place of white sugar.

Brown sugar has a richer flavour and will give you a more moist texture because it caramelises faster than white sugar.

Brown sugar is a natural sweetener that's extracted from sugar cane through a series of boiling, evaporation and crystallization processes. Brown sugar contains 4% molasses and is not as refined as white sugar. 1) Mix brown sugar with a tablespoon of honey. 2) Apply to face for 10 minutes, then rinse. 3) Follow with your regular skin care routine. Brown sugar is a dark, moist sugar that's been processed from sugar cane. Brown sugar is usually made from sugar cane that's been juiced, dried and then ground up into a fine powder. The sugar is then mixed with molasses, which is a by-product of sugar cane processing, to create light brown sugar.

Brown sugar is brown because it's made from sugar cane juice, which is boiled and then allowed to crystallise. As brown sugar is less refined than white sugar, it contains some of the natural molasses that sugar cane juice has. The darker the sugar, the more molasses it contains. Brown sugar is just white sugar

with added molasses. Organic brown sugar is a great exfoliate. It's really helpful for getting rid of dry skin and rough patches, especially around your nose and cheeks. When it comes to exfoliating, you want to use something with a very fine texture that won't scratch your skin or irritate it. Brown sugar is great in coffee, tea, and hot chocolate. It tastes sweet and warm like a hug from your grandma.

Brown sugar is basically white sugar with molasses added back in. This gives it a nuttier flavour and a darker colour. That said, brown sugar is still sugar, so it's best to use sparingly.

Plain brown sugar has the same nutritional value as white sugar. It doesn't have any added nutrients or vitamins and minerals. The process of changing organic white sugar (sucrose) into brown sugar is called 'Melanisation'. The process is achieved by taking the white sugar and mixing it with molasses. Molasses is a by-product of the manufacturing process of sugarcane or sugar beets into sugar. Brown sugar is a great ingredient to use in desserts and baked goods because it makes food taste nice and sweet without using a lot of sugar, which can be really unhealthy. Brown sugar is made by adding molasses to sugar and mixing it together. Brown sugar has a really deep and rich flavour that can add a lot of flavour to your food.

Brown sugar is a form of refined sugar that has molasses added back into it. The molasses gives the brown sugar a richer taste and darker colour. Brown sugar is actually raw sugar which has been combined with molasses and has been refined to remove the flavour of the molasses. Organic Brown Sugar is one of my favourite skincare ingredients.

It is a fantastic humectant (it attracts and retains water), it can be used to balance out acidic products, it's gentle, and it has anti-inflammatory properties. Brown Sugar is an essential ingredient in making baked goods because it helps to give them that sweet brown sugar taste. Brown sugar doesn't just add flavour, though. It also adds texture. Brown sugar is coarser than white sugar so it will add a crunch to whatever you're baking.

Brown sugar is an unrefined sweetener made by refining white sugar with molasses. It is often browner in colour and has a distinct butterscotch flavour.

Brown sugar can be used to replace regular sugar in recipes and can also be used to make desserts. Organic Brown Sugar is a great ingredient to use when you want to add a little bit of sweetness to your product.

Brown sugar is a great way to add a subtle molasses flavour without adding too much brown colour. Brown sugar is a great ingredient for adding moisture to your skin because it has exfoliating properties that can help remove dead skin cells. Brown sugar also helps to gently brighten dark spots and even skin tone.

Brown sugar is widely used as a sweetener in various food items such as cookies, cakes and other baked goods. The most important benefit of brown sugar is that it is made from refined sugar cane and has a less-processed form than white sugar. Brown sugar is a must-have in my pantry.

I use it to sweeten my coffee and tea, I bake with it, and I love using it in recipes—especially desserts. It lends a rich flavour, caramel undertones, and a gorgeous golden hue to baked goods. Brown sugar has a very different density to granulated white sugar. It's a bit stickier and moister, so when you bake with it, it will give whatever you're cooking a different texture.

Brown sugar has its own particular set of benefits. It's created by taking the molasses out of the white sugar crystals, which results in a sweeter and richer product with a hint of molasses flavour. Organic brown sugar is a healthier sweetener option because it's less refined than white sugar. This gives it a bit more nutritional value and more fibre which is great for gut health.

Organic brown sugar is better for you but in the same way, it's not that much of an upgrade from regular brown sugar. Brown sugar is a must-have in your kitchen. You can use it to make fried chicken, caramelize vegetables, sweeten hot beverages like tea or coffee, and even bake with it. It adds a caramelized flavour to baked goods and helps them brown. Brown sugar is also a great replacement for white sugar in many recipes.

Brown sugar benefits go beyond adding sweetness to baked goods. Brown sugar is naturally free of preservatives and chemicals, which is why it's often used as a natural alternative to refined white sugar. It's a great source of

iron, calcium and magnesium. All of these are essential to the proper functioning of your body. Brown sugar is created by adding purified water to pure cane sugar and then heating the mixture until it becomes a liquid.

At this point, the liquid cane sugar is filtered to be left with a dark brown liquid that is referred to as molasses. Brown Sugar is a great warm-toned contour shade for light to medium skin tones. This shade is ideal for buffing and blending or as a transition shade if you're going for a deeper contour.

Brown Sugar is rich in minerals like iron and calcium. It contains more iron than white sugar, which is an essential mineral that helps fight fatigue and maintain healthy blood cells and red blood cells. Brown sugar also contains calcium. Calcium is a mineral that helps build and maintain strong bones and teeth. I have been making organic brown sugar in my home by heating organic white sugar with organic molasses.

I heat it in a large pot and stir it until the sugar is completely melted and then I add organic spices like vanilla and cinnamon and mix it until the spices are well distributed. Brown Sugar, one of our products, is made using the same process as white sugar but has molasses added to it. Molasses adds a sweet and earthy flavour to the sugar and has been shown to have health benefits, such as improved immune function and reduced cancer risk due to its high concentration of antioxidants. Brown sugar contains iron and calcium which are two essential minerals that can help you prevent anaemia.

- 1/4cup Coconut Oil
- 1/2 cup Raw Shea Butter

Add the brown sugar and coconut oil to a jar and melt them together over a double boiler on the stove. The oil should warm up enough that the sugar melts but keep it on the lowest heat setting. Brown sugar is a great ingredient to use in your cooking and really can make a nice difference too many dishes. Brown sugar adds a deeper, richer flavour to food and can help enhance the sweetness of other ingredients. But don't be fooled into thinking that brown sugar is an alternative to white sugar.

1) May Help Relieve Menstrual Cramps

In traditional medicine, some cultures have blended this variety of sugar and ginger into a healthy tea that can eliminate the discomfort of menstrual cramps.

2) May Help Improve Skin Health

Utilizing organic brown sugar as a skin exfoliate is one of the unexpected uses of this sugar; the rough texture makes it ideal for eliminating dirt, grime, and dead skin cells from your body's largest organ.

3) May Act As an Energy Booster

Like any other simple carbohydrate, organic brown sugar does have an energizing effect on the body, making it a popular addition to morning coffee.

4) May Aid in Weight Loss

Eating an excessive amount of organic brown sugar variety isn't a good idea, but molasses is known to boost the metabolism and satiate hunger, which could help in weight loss efforts.

5) May Aid in Pregnancy

Following the delivery of your baby, organic brown sugar has been linked to helping speed the recovery, while also relieving some of the cramps and discomfort during pregnancy

1.7 Why Eat Organic Cane Sugar?

Organic cane sugar is made from sugar cane juice. But sugar is highly refined, Due to which the fibre and nutrition present inside it ends. Organic cane sugar is a less refined form of sugarcane juice. No chemicals are used in it, which makes it a better substitute than sugar.

All organic and natural flours are made from premium quality wholesome grains. The flours are unbleached without any colours or preservatives.

It works to provide coolness to the body. Also, organic cane sugar contains calcium, magnesium, iron, fibre, and antioxidants, which make it a storehouse of health. Since the consumption of sugar started increasing, people stopped consuming cane sugar in the cities. However, even today some people consume cane sugar in many villages and small towns. Due to the fibre in it; it prevents the problem of constipation. Maintains good health. Improves digestive system. There are some good bacteria in the stomach, it maintains them.

It is high in magnesium, which keeps bones, muscles, nerves healthy. Helps in maintaining insulin level in the body. Since, Organic cane sugar contains iron, which does not allow a lack of blood in the body. Iron is very important for the correct haemoglobin level in the blood. By including organic cane sugar in your diet, you can take a step towards maintaining your health better.

1.8 What are the regulations that make sugar organic?

Organic regulations start with how the sugarcane and sugar beet is grown, but organic sugar manufacturers must satisfy organic certification bodies that all the production factors comply with demanding regulations.

Organic sugar beet crops grow in the temperate regions of the world, while organic sugar cane thrives in tropical areas.

The basic principles of organic farming remain the same around the world, although specifics vary. In the UK, the largest certification body is the Soil Association. It defines organic farming as aiming to produce food using natural substances and processes. That includes using energy and natural resources responsibly, maintaining biodiversity, preserving regional ecological balances, enhancing soil fertility and maintaining water quality.

The Organic Food Federation certifies organic products in the UK. They help manufacturers to comply with the production, processing, warehousing, storage, trading, distribution and importation of organic produce.

When most consumers think of sugar, they picture the white crystalline version they put in their tea or coffee. This could be organic or non-organic, but many people assume that white, refined sugar is non-organic, and ask the question ‘what is the difference between organic and white sugar?’ The answer is that a sugar’s status as organic has nothing to do with its colour, texture or use in food products. It’s simply a method of farming, and—when it comes to manufacturing—segregation from conventional sugar.

Consumers also often assume that Fair-trade sugar is organic. But again, a product’s Fair-trade status has nothing to do with its organic status, although there are overlaps, as both certifications assure bulk buyers and consumers that the sugar has been grown with ethical values like sustainability, fairness and shared responsibility.

1.9 ORGANIC SUGAR IN IDUKKI DISTRICT

Marayoor jaggery which is manufactured by marginal cultivators in the forest villages of Marayoor and Kanthalloor who are member of Vana Samrakshana samithies (VSS) for ensuring fair prices and a better livelihood for the community.

Marayoor is a place in the Idukki district of Kerala, 42 Kms north of Munnar on Munnar-Udumalpetta road. Aside from its natural sandal forests and immunerable locations of scenic beauty, Marayoor is best known for its extensive sugarcane cultivation, the major crop of Marayoor and Kanthalloor. Here, more than 2500 acres of land is under sugarcane cultivation.

A product of such cultivation is the world famous delicacy called Marayoor Jaggery. Jaggery is the term for dark brown sugar balls made of condensed sugar cane juice. In sugar cane farms, manufacturing units are set up and the Jaggery is manufactured by the farmers, who mostly belong to the Muthuva tribe.

The peculiar geographical location of Marayoor, which nestles amid the forests of the Western Ghats gives the sugar cane a distinct geographical identity. Added to this, the age old specialized skill of the local people in making the jaggery in the farm itself, make it a unique product. It is therefore in great demand in house holds across the country for the preparation of sweet dishes.

Marayoor Forest Development Agencies (FDA) has taken up the ambitious task of marketing



Jaggery or Gur is made from refined sugar and is a known substitute for sugar. Obtained by boiling raw and concentrated sugarcane juice, jaggery finds its mention in the ancient medical system of Ayurveda. Though jaggery is also made from the sap of date palm and coconut, the one obtained from sugarcane is the one widely consumed.

The production and usage of jaggery dates back to the time of the Rig Vedic period. As stated, sugarcane juice, sugar cubes as well as jaggery were used in the ancient medical treatises of Ayurveda. But did you know Kerala is famous for the production of a famous type of jaggery? Yes. Actually, the peculiar location of Marayoor in Kerala is surrounded by dense forest and is situated in the Idukki district of the state. It perhaps has the best variety of jaggery not in the country but in the entire world.

As stated by facts, Marayoor falls in the rain shadow region, and the quality of molasses is attributed to the specialty in temperature and the ph value

of the earth. Thus, the age-old specialized skill of the local people in making the jaggery added up to its uniqueness. Making of Marayoor jaggery is completely manual. Firstly, the raw sugar is manually extracted from the freshly harvest canes with the help of a diesel-run sugarcane roller.

After it gets pulped into a fibrous residue, its juice is extracted. Its impurities are sieved and then, the boiling process starts. After the syrup thickens, the jaggery is poured into a trough and rolled into the jaggery balls before the cooling down of the mixture. Besides, the waste residue is used to fuel the wok.



A matter of great achievement is that Marayoor jaggery has now received a Geographical Indication (GI tag) that has enabled its production level. Moreover, the GI tag eliminated the external factors affecting the production and confined it to the Marayoor natives only. This Independence Day, it was essential to mention and appreciate the Marayoor jaggery that has made the country proud.

Since we have talked much about jaggery. Let us tell you a simple and quick way of making ‘Gur ki Chai’. Now, making jaggery tea could be complicated. It is quite difficult to make jaggery tea without it getting curdled. But we are there for you. Just follow these simple steps and have a cup of jaggery tea in no time.

Method

- Take a saucepan and add $\frac{3}{4}$ cup water.
- Add $\frac{1}{2}$ tsp. dry ginger powder and 2 crushed cardamoms
- Bring it to a boil
- Add 2 tsp. tea leaves
- Bring it to a boil for a simmer of 3 to 4 minutes
- Add $\frac{1}{2}$ cup milk and simmer for 2 to 3 minutes
- Strain the tea
- Meanwhile, add 2 tsp. of jaggery powder to a cup.
- Add strained tea and mix well
- Serve jaggery tea hot

Tips to make the perfect jaggery tea

- Don't add jaggery to hot milk otherwise, it will curdle.
- You can use palm jaggery or date palm jaggery.
- Prefer strong tea and less milk.
- Brew the tea for a long time.
- You can use almond and soy milk for vegan jaggery tea.

Marayur is famous for sandalwood and is well known by “Marayur Sarkara” and famous for its Geographical Indication (GI) tag. Cultivated in the terraced sugarcane fields of the Marayur and Kanthaloor region, Marayoor jaggery is one of the sweetest jaggery produced using traditional technologies. Here, more than 2500 acres of land is under sugarcane cultivation.

A product of such cultivation is the world famous delicacy called Marayoor Jaggery. Firstly, check the colour and texture of your jaggery - it should be dark brown and have a slightly coarse texture. If it's too smooth or light in colour, chances are it has been mixed with other substances like molasses or caramel syrup.

1.10 HISTORY AND OVERVIEW :

Sugar is the generic name for sweet-tasting, soluble carbohydrates, many of which are used in food. Simple sugars, also called monosaccharide's, include glucose, fructose, and galactose. Compound sugars, also called disaccharides or double sugars, are molecules made of two bonded monosaccharides; common examples are sucrose (glucose + fructose), lactose (glucose + galactose), and maltose (two molecules of glucose). White sugar is a refined form of sucrose. In the body, compound sugars are hydrolysed into simple sugars.

Longer chains of monosaccharides (>2) are not regarded as sugars and are called oligosaccharides or polysaccharides. Starch is a glucose polymer found in plants, the most abundant source of energy in human food. Some other chemical substances, such as ethylene glycol, glycerol and sugar alcohols, may have a sweet taste but are not classified as sugar.

Sugars are found in the tissues of most plants. Honey and fruits are abundant natural sources of simple sugars. Sucrose is especially concentrated in sugarcane and sugar beet, making them ideal for efficient commercial extraction to make refined sugar. In 2016, the combined world production of those two crops was about two billion tonnes. Maltose may be produced by malting grain.

Lactose is the only sugar that cannot be extracted from plants. It can only be found in milk, including human breast milk, and in some dairy products. A cheap source of sugar is corn syrup, industrially produced by converting corn starch into sugars, such as maltose, fructose and glucose.

Sucrose is used in prepared foods (e.g. cookies and cakes), is sometimes added to commercially available ultra-processed food and beverages, and may be used by people as a sweetener for foods (e.g. toast and cereal) and beverages (e.g. coffee and tea). The average person consumes about 24 kilograms (53 pounds) of sugar each year, with North and South Americans consuming up to 50 kg (110 lb) and Africans consuming under 20 kg (44 lb).

As free sugar consumption grew in the latter part of the 20th century, researchers began to examine whether a diet high in free sugar, especially refined sugar, was damaging to human health. Excessive consumption of free sugar is associated with obesity, diabetes, cardiovascular disease, cancer and tooth decay. In 2015, the World Health Organization strongly recommended that adults and children reduce their intake of free sugars to less than 10% of their total energy intake, and encouraged a reduction to below 5%.

The etymology reflects the spread of the commodity. From Sanskrit (śarkarā), meaning "ground or candied sugar", came Persian shakar and Arabic sukkar. The Arabic word was borrowed in Medieval Latin as succarum, whence the 12th century French sucre and the English sugar. Sugar was introduced into Europe by the Arabs in Sicily and Spain.

The English word jaggery, a coarse brown sugar made from date palm sap or sugarcane juice, has a similar etymological origin: Portuguese jágara from the Malayalam cakkarā, which is from the Sanskrit śarkarā.

Sugar has been produced in the Indian subcontinent[6] since ancient times and its cultivation spread from there into modern-day Afghanistan through the Khyber Pass. It was not plentiful or cheap in early times, and in most parts of the world, honey was more often used for sweetening. Originally, people chewed raw sugarcane to extract its sweetness.

Even after refined sugarcane became more widely available during the European colonial era, palm sugar was preferred in Java and other sugar producing parts of southeast Asia, and along with coconut sugar, is still used locally to make desserts today.

Sugarcane is native of tropical areas such as the Indian subcontinent (South Asia) and Southeast Asia. Different species seem to have originated from different locations with *Saccharum barberi* originating in India and *S. edule* and *S. officinarum* coming from New Guinea. One of the earliest historical references to sugarcane is in Chinese manuscripts dating to 8th century BCE, which state that the use of sugarcane originated in India.

In the tradition of Indian medicine (āyurveda), the sugarcane is known by the name Ikṣu and the sugarcane juice is known as Phāṇita. Its varieties, synonyms and characteristics are defined in nighaṇṭus such as the Bhāvaprakāśa (1.6.23, group of sugarcanes). Sugar remained relatively unimportant until the Indians discovered methods of turning sugarcane juice into granulated crystals that were easier to store and to transport.

Crystallized sugar was discovered by the time of the Imperial Guptas, around the 5th century CE. In the local Indian language, these crystals were called khandā (Devanagari: कण्डा, Khaṇḍa), which is the source of the word candy. Indian sailors, who carried clarified butter and sugar as supplies, introduced knowledge of sugar along the various trade routes they travelled.[16] Traveling Buddhist monks took sugar crystallization methods to China.

During the reign of Harsha (r. 606–647) in North India, Indian envoys in Tang China taught methods of cultivating sugarcane after Emperor Taizong of Tang (r. 626–649) made known his interest in sugar.

China established its first sugarcane plantations in the seventh century. Chinese documents confirm at least two missions to India, initiated in 647 CE, to obtain technology for sugar refining.] In the Indian subcontinent,[6] the Middle East and China, sugar became a staple of cooking and desserts.

Nearchus, admiral of Alexander the Great, knew of sugar during the year 325 BC, because of his participation in the campaign of India led by Alexander (Arrian, Anabasis). The Greek physician Pedanius Dioscorides in the 1st century CE described sugar in his medical treatise De Materia Medica, and Pliny the Elder, a 1st-century CE Roman, described sugar in his Natural History:

"Sugar is made in Arabia as well, but Indian sugar is better. It is a kind of honey found in cane, white as gum, and it crunches between the teeth. It comes in lumps the size of a hazelnut. Sugar is used only for medical purposes." Crusaders brought sugar back to Europe after their campaigns in the Holy Land, where they encountered caravans carrying "sweet salt".

Early in the 12th century, Venice acquired some villages near Tyre and set up estates to produce sugar for export to Europe. It supplemented the use of honey, which had previously been the only available sweetener. Crusade chronicler William of Tyre, writing in the late 12th century, described sugar as "very necessary for the use and health of mankind". In the 15th century, Venice was the chief sugar refining and distribution center in Europe.

There was a drastic change in the mid-15th century, when Madeira and the Canary Islands were settled from Europe and sugar introduced there. After this an "all-consuming passion for sugar ... swept through society" as it became far more easily available, though initially still very expensive.

By 1492, Madeira was producing over 1,400,000 kilograms (3,000,000 lb) of sugar annually. Genoa, one of the centers of distribution, became known for candied fruit, while Venice specialized in pastries, sweets (candies), and sugar sculptures. Sugar was considered to have "valuable medicinal properties" as a "warm" food under prevailing categories, being "helpful to the stomach, to cure cold diseases, and sooth lung complaints".

A feast given in Tours in 1457 by Gaston de Foix, which is "probably the best and most complete account we have of a late medieval banquet" includes the first mention of sugar sculptures, as the final food brought in was "a heraldic menagerie sculpted in sugar: lions, stags, monkeys ... each holding in paw or beak the arms of the Hungarian king".

Other recorded grand feasts in the decades following included similar pieces. Originally the sculptures seem to have been eaten in the meal, but later they become merely table decorations, the most elaborate called *trionfi*. Several significant sculptors are known to have produced them; in some cases their preliminary drawings survive. Early ones were in brown sugar, partly cast in molds, with the final touches carved. They continued to be used until at least the Coronation Banquet for Edward VII of the United Kingdom in 1903; among other sculptures every guest was given a sugar crown to take away.

In August 1492, Christopher Columbus collected sugar cane samples in La Gomera in the Canary Islands, and introduced it to the New World. The cuttings were planted and the first sugar-cane harvest in Hispaniola took place

in 1501. Many sugar mills had been constructed in Cuba and Jamaica by the 1520s.[36] The Portuguese took sugar cane to Brazil. By 1540, there were 800 cane-sugar mills in Santa Catarina Island and another 2,000 on the north coast of Brazil, Demarara, and Surinam. It took until 1600 for Brazilian sugar production to exceed that of São Tomé, which was the main center of sugar production in sixteenth century.

Until the late nineteenth century, sugar was purchased in loaves, which had to be cut using implements called sugar nips. In later years, granulated sugar was more usually sold in bags. Sugar cubes were produced in the nineteenth century. The first inventor of a process to produce sugar in cube form was Jakob Christof Rad, director of a sugar refinery in Dačice.

In 1841, he produced the first sugar cube in the world.] He began sugar-cube production after being granted a five-year patent for the process on 23 January 1843. Henry Tate of Tate & Lyle was another early manufacturer of sugar cubes at his refineries in Liverpool and London. Tate purchased a patent for sugar-cube manufacture from German Eugen Langen, who in 1872 had invented a different method of processing of sugar cubes.

Sugar was rationed during World War I, though it was said that "No previous war in history has been fought so largely on sugar and so little on alcohol", and more sharply during World Rationing led to the development and use of various artificial sweeteners

Since at least the 1990s, non-governmental organizations, private sector actors and other sugarcane industry stakeholders have used VSSs to provide consumers with a product that they can identify as having been produced through sustainability conscious methods that address the challenges listed above.

For example, sugarcane production that meets these standards needs to limit air pollution and GHG emissions, while also conserving water resources. Compliance also means respecting labour rights and worker health and safety, not engaging in land grabbing and taking steps to improve producer profitability. The sustainability impacts and reputational risks associated with the sugarcane industry have been a significant motivation for civil society and

private sector stakeholders to support the establishment and propagation of VSS in the sector.

By providing sugarcane-based product consumers with some assurances that their choices can support more sustainable sugarcane farming practices, VSSs are creating a virtuous cycle of increasing investment in sugarcane farming operations that addresses many of the sector's social environmental challenges.

VSSs only recently started capturing a share of sugarcane production in 2013 with the establishment a few years earlier of Bonsucro, a single-sector initiative focused on enabling more sustainable sugarcane production. There have been promising signs on the supply side in recent years: VSS-compliant sugarcane experienced a compound annual growth rate (CAGR) of about 52 per cent from 2008 to 2016, reaching at least 3.2 per cent of sugarcane overall production in 2016. Bonsucro, Fairtrade, Organic and Rainforest Alliance are the main VSSs in the sugarcane sector when ranked by production size.

1.11 OBJECTIVES OF THE STUDY:

- To identify the level of satisfaction of consumer towards organic sugar.
- To study the demographic profile of the consumer.
- To find consumer attitude and analyse the reason for consumer preference towards organic sugar.
- To find the level of awareness in the usage of organic sugar and study the buying behaviour.
- To identify problems while using the organic sugar and offer suggestion based on findings.

1.12 NEEDS OF THE STUDY

- Organic sugar helps to boost the immune system, improve digestion, and promote healthy skin and hair.
- Organic sugar gives more benefit than conventional one.
- It also been reported to positively impact on elderly people.
- The profitability of organic sugar vs. conventional one is the crucial one from the point of view of the Indian farmers.

1.13 SCOPE OF THE STUDY

- The main purpose of the study is to analyse consumer satisfaction towards organic sugar.
- This study covers the usage of organic sugar and to know how many people are aware about organic sugar in Idukki district
- In coming years there has been an increased demand in the usage of organic sugar.
- To know whether the organic sugar meet the health requirements of the people.

1.14 LIMITATIONS OF THE STUDY :

Some of the unavoidable limitations of the present work as follows ;

- A sample of the study is restricted among 150.
- The findings of the study are applicable only to the district of Idukki and are not applicable to any other districts of Tamilnadu or Kerala.
- There will be a lot of complications while collecting the data because it is based on only one district.
- The lack of validity in the data collection process can lead to biased results.
- A lack of data or trustworthy data will almost certainly necessitate limiting the scope of your research.

CHAPTER SCHEME

"A Study on consumer satisfaction towards organic sugar" is presented in five chapters.

Chapter- I

The first chapter titled Research Design forming introductory part of the report deals with the history and overview, which includes description, Objectives of the study, Scope of the study , Need of the study and Limitation of the study.

Chapter-II

The Second chapter summarizes the "Review of literature", under which a brief description of earlier studies were included.

Chapter -III

The Third chapter describes the research methodology and tools and techniques.

Chapter -IV

Fourth chapter deals with Analysis and Interpretation under which the data collected through the primary sources are interpreted.

Chapter -V

Fifth chapter presents the summary of findings, suggestions, and conclusion.

CHAPTER – II

REVIEW OF LITERATURE

1. **Meenakshi Saratha and Linda Marry Simon (2015)** conducted a study on **customer satisfaction level on green products with special reference to Coimbatore district**. They proved that now-a-days companies with the help of advertising started to educate the consumer about the benets of Green products.

2. **Bambang et al. (2017)** made a study on **green product and its impact on to customer satisfaction**. The respondents for this study were 130 respondents who had been pick up randomly to make the questionnaire. The data were collected and analysed by using statics program Social Sciences (SPSS). The tests used for analysis. They reported that the higher facility of green products provided by the hotel can increase customer satisfaction level.

3. **Ratheesh Kumar (2017)** conducted a study with **consumer satisfaction towards organic food products with special reference to Coimbatore city**. The study was based on primary date. The required primary data have been collected 100 sample respondents through questionnaire such collected 100 sample respondents through questionnaire such collected data have been square statistical tools like simple percentage, chi-square analysis and average ranking analysis he found that the major reasons are organic producer are low, adequate market facility is not there, few number of shops, lack of awareness and so on. Therefore it former as well as government gives interest to organic farming easily farming easily enhancing good marketing system in Tamil Nadu.

4. **Kalaiselvi (2018)** made a study with **on consumer satisfaction towards organic food products with special references to Erode District**. The study was based on both primary and secondary data. The required primary data have been collected from 200 sample respondents through as well structure questionnaire. Secondary data were collected from books, journals, newspapers and websites. Such collected data have been like analysed with the help of various statistical tools simple percentage analysis, chi-square analysis, factor analysis and weighted average sure ranking analysis. The result revealed that were aware well of images and availability but not loyal entirely too organic food products in Erode city.

5. **Abisha and Kannan (2018)** conducted a **study on consumer satisfaction towards organic products in Palakkad district Kerala**. For their study, they have collected data from 250 sample respondents. They found that the main reason for purchasing organic food products is an expectation of a healthier and environment friendly means of production.

6. **Shafie and Rennie (2012) [16]** assessed **consumer perceptions towards organic food** and found that food safety, human health and environmental concern along with sensory attributes such as nutritive value, taste, freshness and appearance influence organic food consumer preferences. Premium price continues to suppress organic food consumption. consumption patterns are ever-changing as a result of health and environmental issues.

7. **Mehra and Ratna (2014) [9]** found that six significant factors were found to influence the attitude towards organic food. They were perception towards organic food, health consciousness, product information, value for money, accessibility and trust. Results of the study showed that **women and younger consumers showed a positive attitude towards organic food** and perceived consumption of organic food to be a healthier food option. They were keen on getting product information and compared labels while selecting nutritious food. Women perceived consumption of organic food to be a healthier option.

8. **Sharma and Bali in 2014 [17]** concluded that consumers are very much aware that organic food are good for health, these products are free from chemical which resulting in no side effects and do not cause harm to the consumers. The consumers living in urban areas are more aware about organic food products. Consumer believes that consuming of organic food helps to reduce stress level and maintain an energetic lifestyle. Another factor this **study found that respondents are willing to pay even higher prices** because of it is beneficial for health.

9. **Sivathanu in 2015 [18]** also add and revealed that **consumers prefer to buy organic food products** because of their perception that the organic food products are healthy and safe, nutritious and environment friendly.

10. **Pandurangarao et al. (2017)** concluded ten factors such as labels, health, concern, environment concern, brand advertising, safety, accessibility, affordability, freshness and store location as **influencing factors to buy organic food**. Out of this health, environment and safety are key factors that are found primary influencers.

11. **Mendon, S et al (2020)** The farming of organic products is a unique practice which balances the environmental sustainability and also controls the detrimental effect both on customer's safety by creating a positive notion in the minds of the customers. The study is basically related to **the growth of Organic farm products and its influence towards customer attitude** which leads to purchase intention.

12. **M, R. K.(2020)** Organic food products are foods that are proceeds without using synthetic materials such as pesticides, antibiotics and chemical fertilizers. These are organic fruits, vegetables, dairy products, Organic rice, Pulses, oil, beauty products, even **ready made eatables are processed by environment friendly methods**. During the production, non organic food products use synthetics. Generally, these synthetics include pesticides and fertilizers.

13. **Gumber, G., and Rana, J.(2020)** The global market for organic food products has been growing significantly since the last decade. Indian organic food market has also witnessed growth and is **anticipated to grow at a significant 25-30 percent**.

14. **Singhal, N (2018)** **Organic foods claim to help serve several benefits including healthiness and sustainable production**. But they largely lack customer support and thus less market demand due to the lack of knowledge, trust and information about such food products.

15. **Nedumaran, G., and M, M(2020)** The aim of the paper is **to assess the involvement of organic farming to amplify the sustainability of Organic agriculture.** Widespread use of chemicals in inorganic food production technology compelled the health careful people to discover and support organic farming methods in agriculture. Particularly in poorer countries sustainable Organic Farming can throw in to meaningful socio-economic and economically sustainable development.

16. **Paul, J., and Rana, J (2014)** The main objective of this study is **to understand the behavior of ecological consumers and their intention to purchase organic food.** The study aims to determine the factors influencing consumer behavior towards organic food and the results indicate that health, availability and education from demographic factors positively influence the consumer's attitude towards buying organic food. Overall satisfaction of consumers for organic food is more than inorganic food but the satisfaction level varies due to different factors.

17. **Nalange, T. (2020)** Organic farming began long back, and is more of a resurgence of how things used to be, although with advanced equipment, streamlined supply chains, and the benefit of modern marketing strategies and retailing techniques over the last few years there has been a sudden and **rapid increase in demand for organic products all over the country.**

18. **Sharma (2001)** makes a case for **organic farming as the most widely recognized alternative** farming system to the conventional one. The disadvantages of the latter are described in detail. Other alternatives in the form of biological farming, natural farming and permaculture are also described. The focus is on the organic farming, which is considered as the best and thus is discussed extensively. The work is not addressing **the relevant issues in the adoption of organic farming on ground.**

19. **Rahudkar and Phate (1992)** narrate **the experiences of organic farming in Maharashtra.** Individual farmers growing sugarcane and grapes, after using vermi compost, saw the soil fertility increased, irrigation decreased by 45 per cent and sugarcane quality improved. The authors say that net profits from both the sugarcane and grape crops are high in organic farms.

20. **Howard's (1940)** Agricultural Testament draws attention to the destruction of soil and deals with the consequences of it. It suggests methods to restore and maintain the soil fertility. The study contains a detailed deposition of the famous Indore method of maintaining soil health. The reasons and sources of the erosion of soil fertility and its effect on living things are discussed. **The criticism of the agriculture research** and examples of how it had to be carried out to protect soil and its productivity are discussed in detail.

CHAPTER -III

RESEARCH METHODOLOGY

3.1 INTRODUCTION:

Research methodology is a way of systematically solve the Problems. The purpose of the research is to discover answers to questions through the application of scientific procedures. Research can also be defined as a scientific and systematic for valid information on a Specific topic. It also referred to art of scientific investigation. The main aim of research is to find the truth which is hidden and which has not been discovered yet. It not only includes the research methods but also the logic behind the methods we use. The research methodology in the present study involves the consumer behavior towards organic sugar in Idukki district. The collection of data and analysis strategy are planned accordingly.

3.2 AREA OF THE STUDY:

The study was conducted in Marayoor in Idukki district. Marayoor is a town in Devikulam taluk of Idukki district in the southwestern Indian state of Kerala. It is located 42 kilometers north of Munnar on SH 17 connecting Munnar with Udumalpet, Tamil Nadu. The 'Marayoor sarkara', as it is known in the market, is of high quality with 97 percent sugar content.

3.3 PERIOD OF THE STUDY:

The research is carried out for six months from the months of December 2023 to May 2024.

3.4 SAMPLING TECHNIQUE:

The present study is concerned with consumer behavior towards organic sugar with special reference to Idukki district . A non-probability sampling procedure namely convenience sampling method was used to select sample

respondents for the study. The study was conducted among 160 sample respondents in Idukki distirct. 160 respondents were responded for the study.

3.5 SAMPLING SIZE:

The sample size is restricted to 160 respondents.

3.6 COLLECTION OF DATA:

The study is based on the primary data collection from the respondents of Idukki district.

3.6.1 PRIMARY DATA:

Primary data were collected through survey from the customers of the company using questionnaire. Questionnaire helps to recognize the customers' expectations.

3.6.2 SECONDARY DATA:

The secondary data has been collected from the various books, journals, research articles, newspapers and internet website.

3.7 PILOT STUDY:

The questionnaire was pre-tested with a few samples among the selected sample respondents in the study areas. Taking into consideration the suggestions of the selected sample respondents, necessary modifications and changes were incorporated in the questionnaire after the pilot study.

3.8 TOOLS AND TECHNIQUES FOR DATA ANALYSIS:

Data analysis is the process of systematically applying statistical and logical techniques to describe, illustrate and evaluate data. In this study the following statistical applications were used.

- Percentage analysis
- T test
- Chi square analysis
- ANOVA

3.8.1 PERCENTAGE ANALYSIS:

Percentage is used to describe relations. Percentage refers to making comparison between two or more series of data. Percentage is very helpful in making meaningful and scientific comparison between the two or more series of data.

3.8.2 CHI-SQUARE ANALYSIS:

Chi-Square is analyzed and used to find out the significant relationship between respondents occupation and frequency of using social media. The Chi-Square test is a nonparametric test where the data is not assumed to the goodness of fit, the significance of population variance, and the homogeneity or differ

The formula for chi-square = $\sum \frac{(\mathbf{O}-\mathbf{E})^2}{\mathbf{E}}$

E

Where,

O stands for Observed Frequency.

E stands for Expected Frequency.

After finding the value of chi square the table value is to be calculated.

Table value = (R-1) (C-1).

Where,

R stands for Numbers of Rows.

C stands for Number of column.

hence in population variance. The Chi- Square value was obtained using the

3.8.3 ANOVA:

ANOVA stands for analysis-of-variance, a statistical model meant to analyze data. The basic principle of ANOVA is to test the differences among the means of the populations by examining the amount of variation within each of these samples, relative to the amount of variation between the samples. Through ANOVA technique, one can investigate any number of factors which are hypothesized or said to influence the dependent variable.

FORMULA

To calculate the chi-square test statistic, Minitab ranks the data separately within each block and sums the ranks for each treatment.

The formula is:

$$S = 12[nk(k+1)]^{-1}[\sum_j (\sum R_j)^2] - 3n(k+1)$$

The formula is:

$$S(\text{adj}) = \frac{S}{C}$$

Where C is a correction factor that is equal to:

$$1 - \frac{\sum_i (t_i^3 - t_i)}{N(k^3 - k)}$$

$$N(k^3 - k)$$

CHAPTER - IV

ANALYSIS AND INTERPRETATION

PERCENTAGE ANALYSIS

Table 4.1 : Gender of the respondents

Source: Primary Data

| Gender | Frequency | Percent |
|---------------|------------------|----------------|
| Male | 75 | 47 |
| Female | 85 | 53 |
| Total | 160 | 100 |

INTERPRETATION:The table reveals the classification of respondents based on their gender within the sample size of 160. 85% of the respondents are female and 15% of the respondents are male.

Majority 85% of the respondents are female.

Chart 4.1:

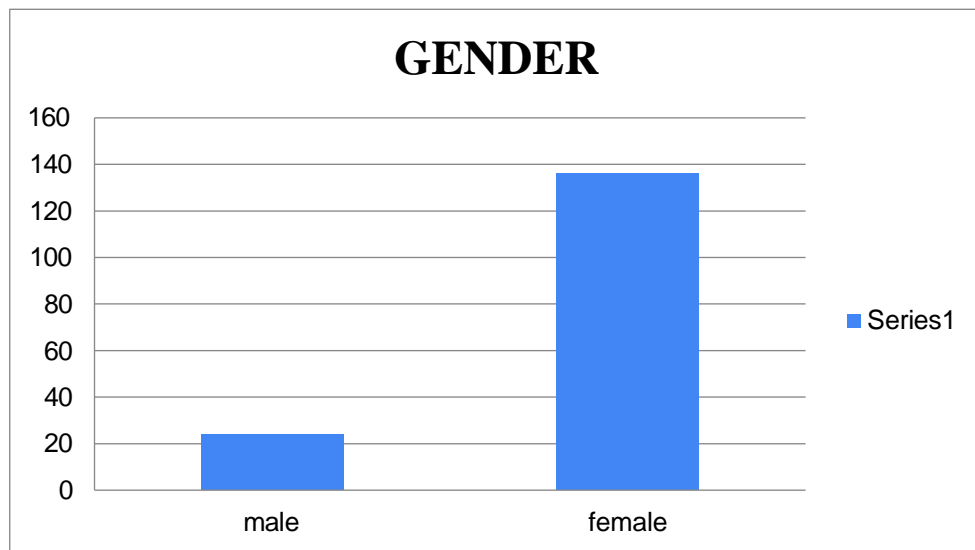


Table 4.2 : Occupation of the respondents

Source: Primary data

| Occupation | Frequency | Percent |
|-------------------|------------------|----------------|
| Student | 20 | 12 |
| Self employed | 119 | 73 |
| Govt employee | 5 | 5 |
| Private employee | 16 | 10 |
| Total | 160 | 100 |

INTERPRETATION :

The table reveals the classification of respondents based on the occupation within sample size of 12% of the respondents are belongs to students. 73% of the respondents belongs to self employed. 5% of the respondents belongs to Govt.employee. 10% belongs to private employee.

Majority 73 % of the respondents are self employed.

Chart 4.2 :

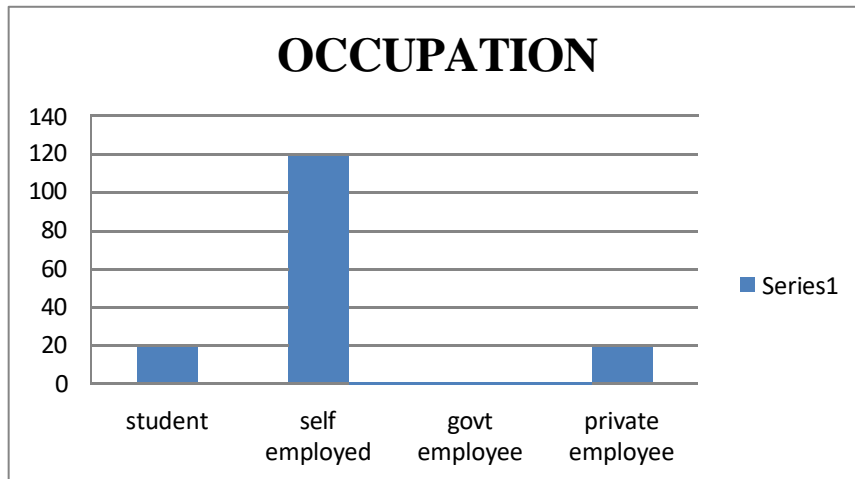


Table 4.3: Marital status of the respondents

Source: Primary data

| Marital Status | Frequency | Percent |
|-----------------------|------------------|----------------|
| Married | 100 | 62 |
| Unmarried | 60 | 38 |
| Total | 160 | 100 |

INTERPRETATION:

The table reveals the classification of respondents based on the marital status within the sample size of 160. 62% of the respondents are married.38% of the respondents are unmarried.

Majority 62% marital status of the respondents are married.

Chart 4.3:

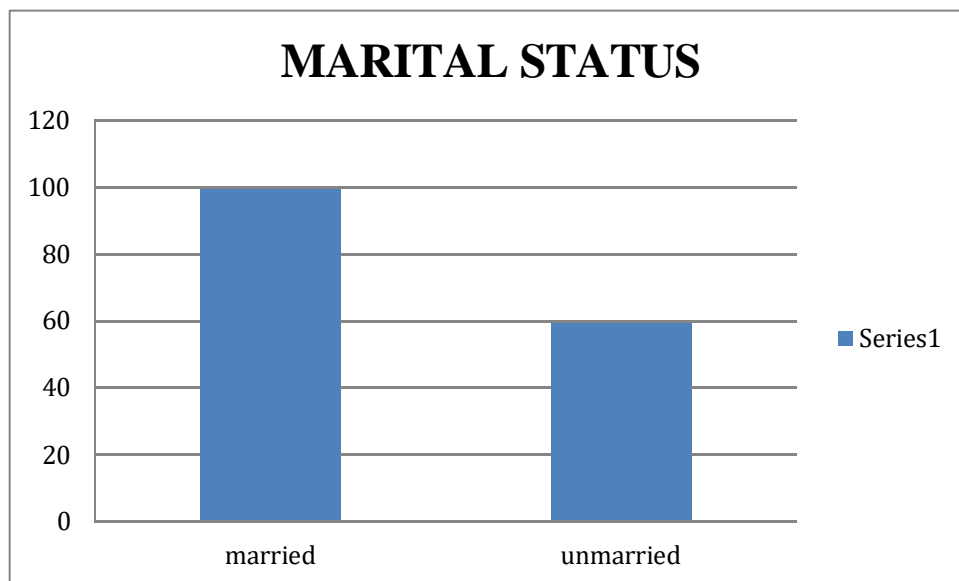


Table 4.4: Income of the respondents

Source: Primary data

| Income | Frequency | Percent |
|-------------------|------------------|----------------|
| Nil | 30 | 19 |
| Rs.20000-Rs.30000 | 71 | 45 |
| Rs.30000-Rs.40000 | 29 | 17 |
| Above Rs.40000 | 30 | 19 |
| Total | 160 | 100 |

INTERPRETATION:

The table reveals that the classification of respondents on the basis of their monthly income within the sample size of 160. 19% of respondents are students so the income is nil. 45% of the respondents gets below 30000. 17% of the respondents gets below 40000. 19% of the respondents gets above 40000.

Majority 45% of the respondents are getting the income below 30000.

Chart 4.4:

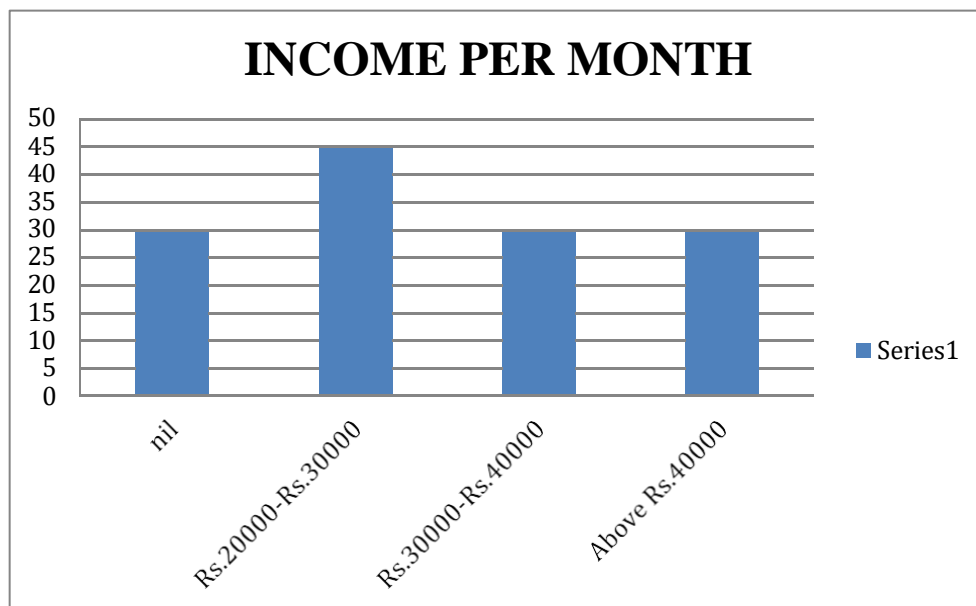


Table 4.5 : Are you aware of organic sugar?

Source: Primary data

| Are you aware? | Frequency | Percent |
|-----------------------|------------------|----------------|
| Yes | 139 | 86 |
| No | 21 | 14 |
| Total | 160 | 100 |

INTERPRETATION:

The table reveals the classification of the respondents based on the awareness of organic sugar within the sample size of 160. 86% of the respondents are aware of organic sugar. 14% of the respondents are not aware of organic sugar.

Majority 86% of the respondents are aware of organic sugar.

Chart 4.5:

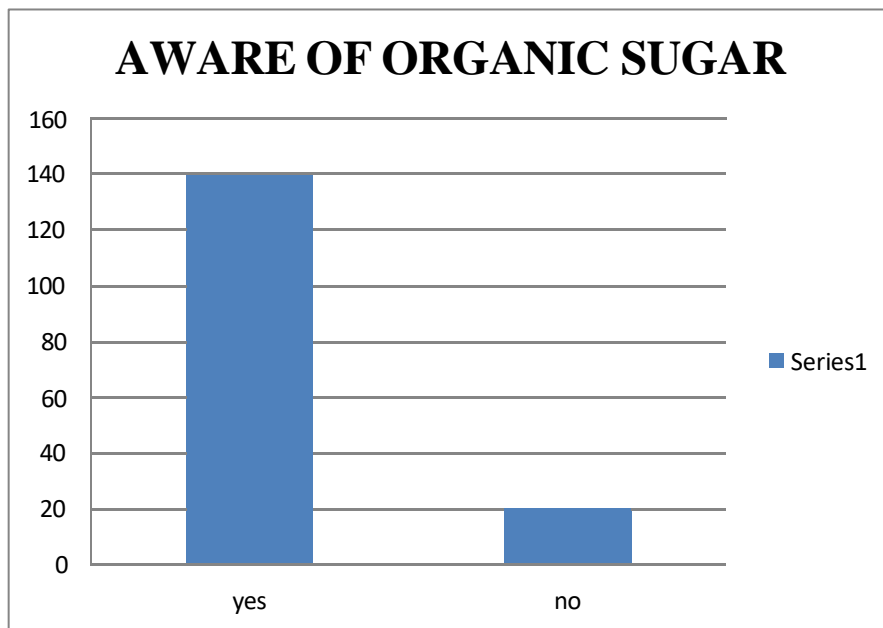


Table 4.6 : Where did you get awareness about organic sugar?

Source : Primary data

| Awareness | Frequency | Percent |
|-----------------------|------------------|----------------|
| Advertisement | 40 | 25 |
| Friends or colleagues | 38 | 25 |
| Neighbours | 33 | 20 |
| Social media | 49 | 30 |
| Total | 160 | 100 |

INTERPRETATION:

The table reveals that the classification of respondents from where they get awareness of organic sugar within the sample size of 160. 25% of the respondents gets awareness from advertisement. 25% of the respondents gets awareness from friends or colleagues. 20% of the respondents gets awareness from neighbours. 30% of the respondents gets awareness from social media.

Majority 30% of the respondents gets awareness from Social media.

Chart 4.6 :

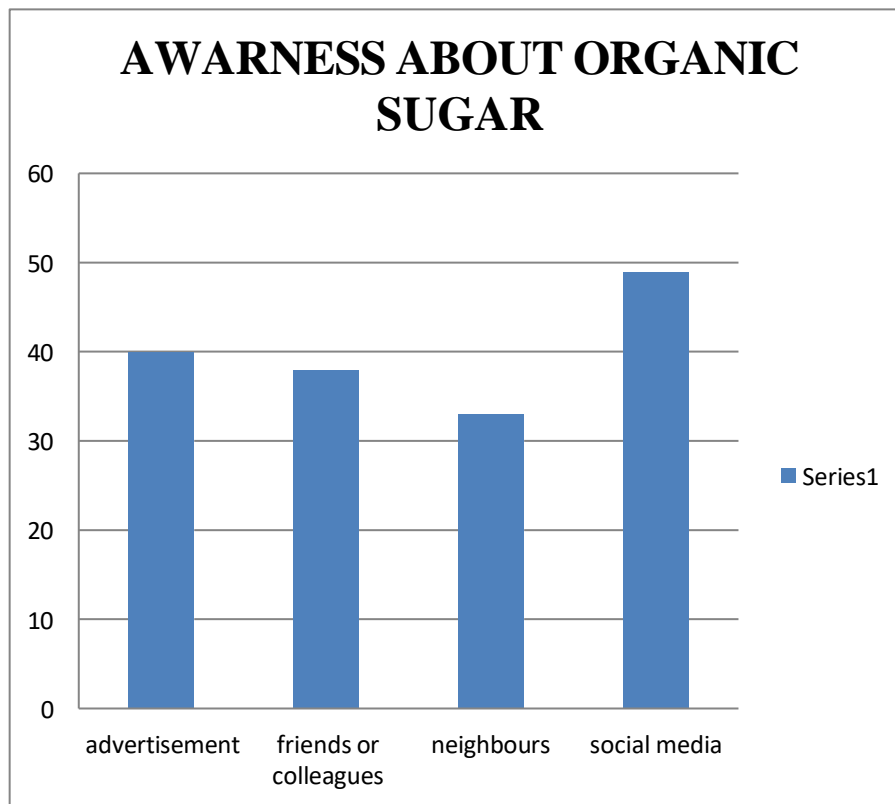


Table 4.7 : Where did you buy organic sugar

Source: Primary Data

| Buy | Frequency | Percent |
|--------------------------------|------------------|----------------|
| directly from producer | 39 | 25 |
| specialized organic food shops | 26 | 16 |
| supermarket | 71 | 44 |
| other | 24 | 15 |
| Total | 160 | 100 |

INTERPRETATION:

The table reveals that the classification of respondents from where they buy organic sugar within the sample size of 160. 25% of the respondents buy directly from the producer.16% of the respondents buy from specialized organic food shops. 44% of the respondents buy from the supermarket.15% of the respondents buy from other sources.

Majority 44% of the respondents buy organic sugar from the supermarket.

Chart 4.7 :

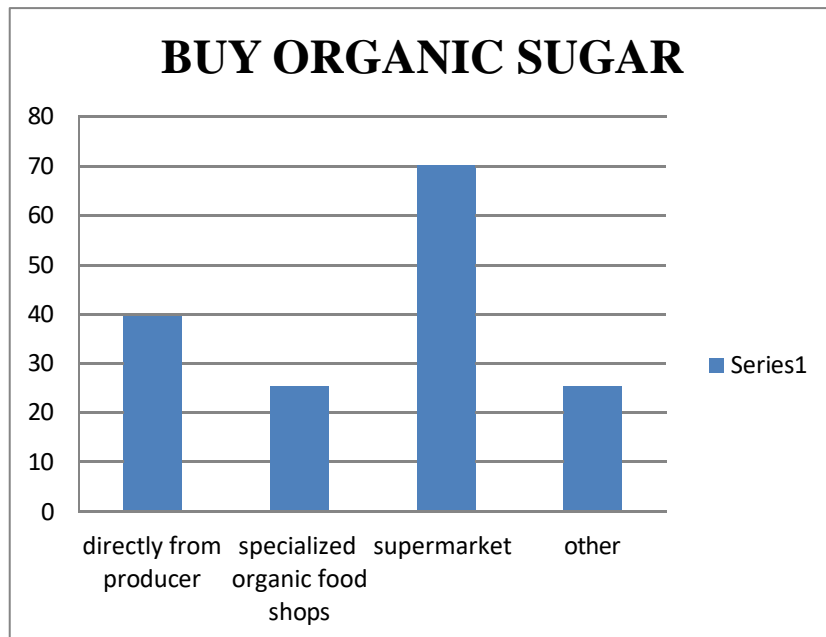


Table 4.8 : Purchases organic sugar in past one year

Source : Primary Data

| Past one year | Frequency | Percent |
|----------------------|------------------|----------------|
| Yes | 92 | 57 |
| No | 28 | 18 |
| May be | 40 | 25 |
| Total | 160 | 100 |

INTERPRETATION:

The table reveals the classification of respondents who purchased organic sugar for the past one year within the sample size of 160. 57% of the people have purchased organic sugar in the past one year.18% of the respondents have purchased organic sugar in the past one year.25% of the respondents may or may not be purchased.

Majority 57% of the respondents have purchased organic sugar in past one year.

Chart 4.8:

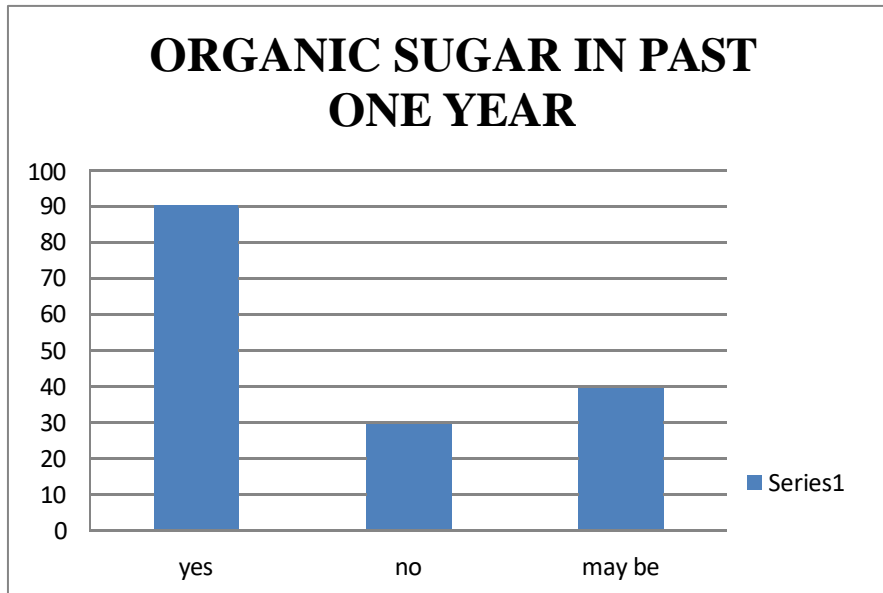


Table 4.9 : How long have you been using organic sugar?

Source: Primary data

| Using of organic sugar | Frequency | Percent |
|-------------------------------|------------------|----------------|
| Less than 6 months | 57 | 35 |
| 6months-1year | 14 | 9 |
| More than 1 year | 66 | 42 |
| Not used | 23 | 14 |
| Total | 160 | 100 |

INTERPRETATION:

The table reveals that the classification of respondents of how long they have been organic sugar within the sample size of 160. 35% of the respondents using organic sugar for less than 6 months. 9% of the respondents using organic sugar for 1 year. 42% of the respondents using organic sugar for more than 1 year.14% of the respondents are not using organic sugar.

Majority 42% of the respondents using organic sugar less than 6 months.

Chart 4.9:

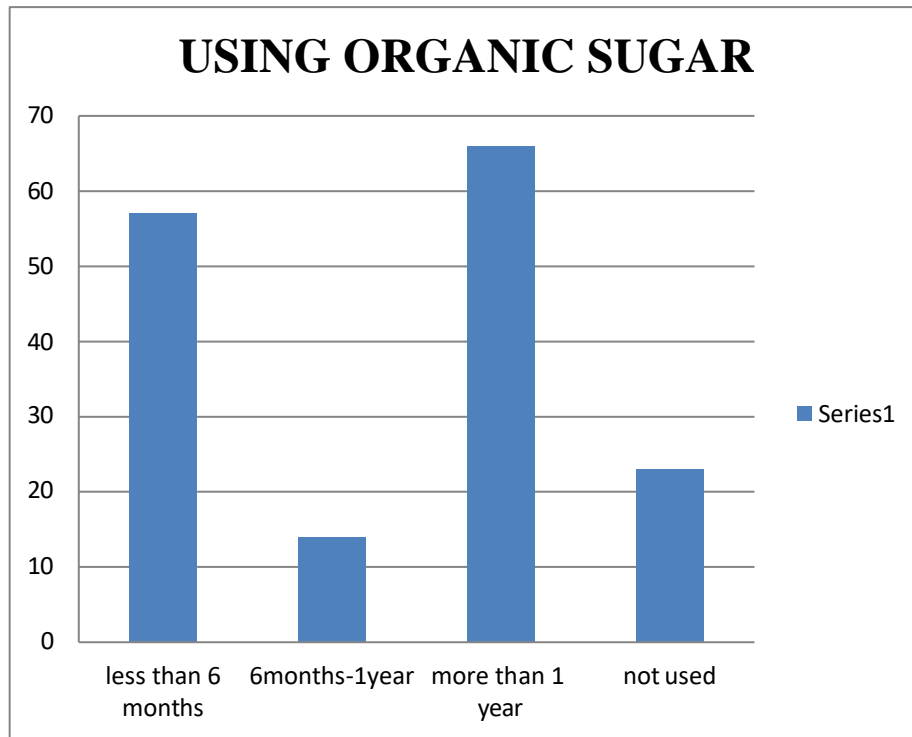


Table 4.10: Kind of organic sugar do you buy

Source: Primary Data

| Kind | Frequency | Percent |
|-------------|------------------|----------------|
| Branded | 113 | 70 |
| Non-branded | 47 | 30 |
| Total | 160 | 100 |

INTERPRETATION:

The table reveals the classification of respondents on which kind of organic sugar do they buy within the sample size of 160.70% of the respondents are using branded organic sugar.30% of the respondents using non branded organic sugar.

Majority 70% of the respondents are using branded organic sugar.

Chart 4.10:

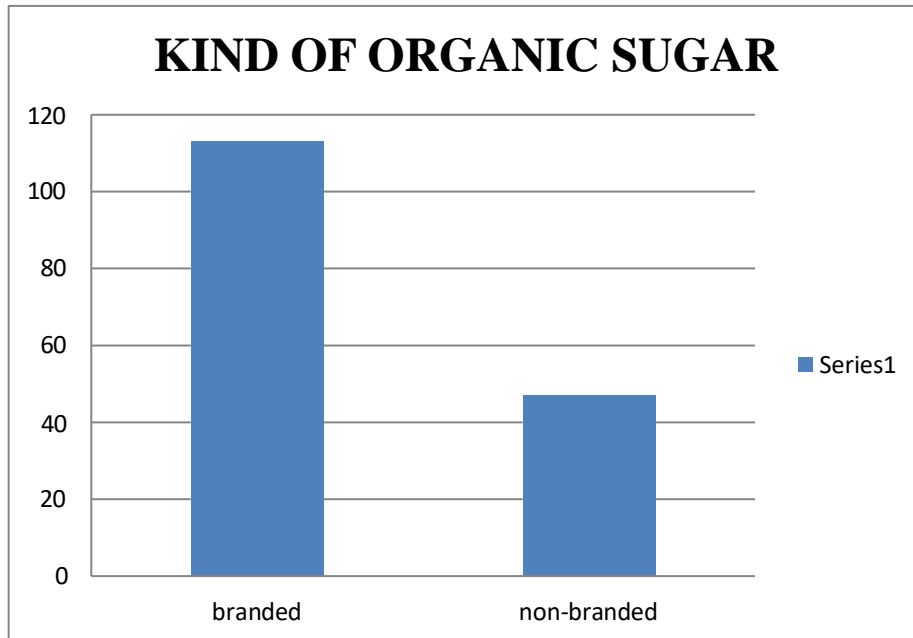


Table 4.11: Brands prefer the most while buying.

Source: Primary data

| Brand | Frequency | Percent |
|--------------|------------------|----------------|
| Cococa | 11 | 7 |
| Gulas | 26 | 16 |
| MRT organics | 20 | 12 |
| Other | 103 | 65 |
| Total | 160 | 100 |

INTERPRETATION:

The table reveals the classification of respondents of which brands the people prefer while buying organic sugar within the sample size of 160. 7% of the respondents prefer cococa brand. 16% of the respondents prefer gulas. 12% of the respondents prefer MRT organics. 65% of the people prefer other brand.

Majority 65% of the respondents prefer other brand.

Chart 4.11:

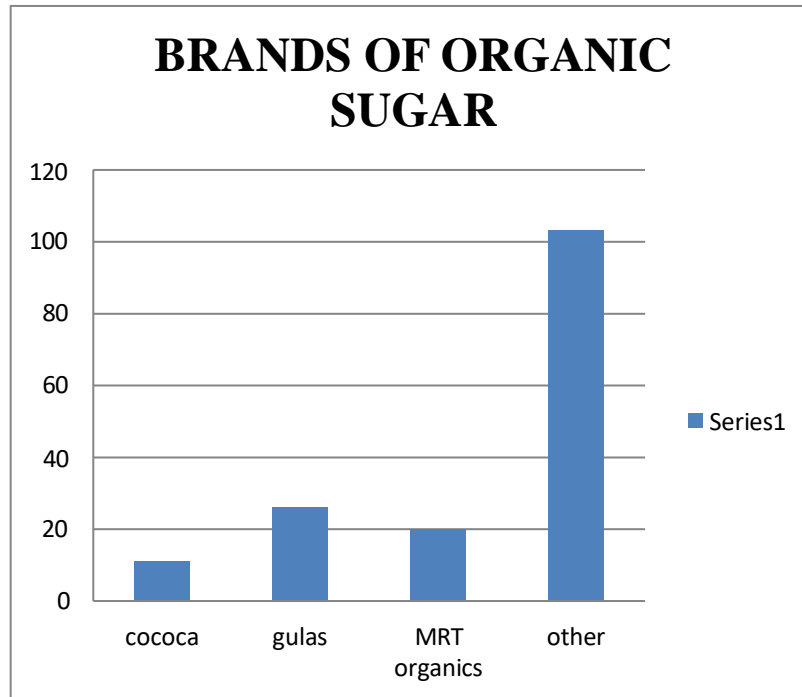


Table 4.12 : Price of organic sugar continuously rises then would you still purchase?

Source : Primary Data

| Price | Frequency | Percent |
|----------|-----------|---------|
| Yes | 79 | 50 |
| No | 23 | 15 |
| Not sure | 58 | 35 |
| Total | 160 | 100 |

INTERPRETATION

The table reveals the classification of the respondents who will purchase the organic sugar when the price continuously rises within the sample size 160.50% of the respondents are willing to pay extra amount when the price rises .15% of the respondents are not willing to pay extra amount when the price rises.35% of the respondents are not sure.

Majority 50% of the respondents are willing to pay extra amount when the price rises continuously.

Chart 4.12:

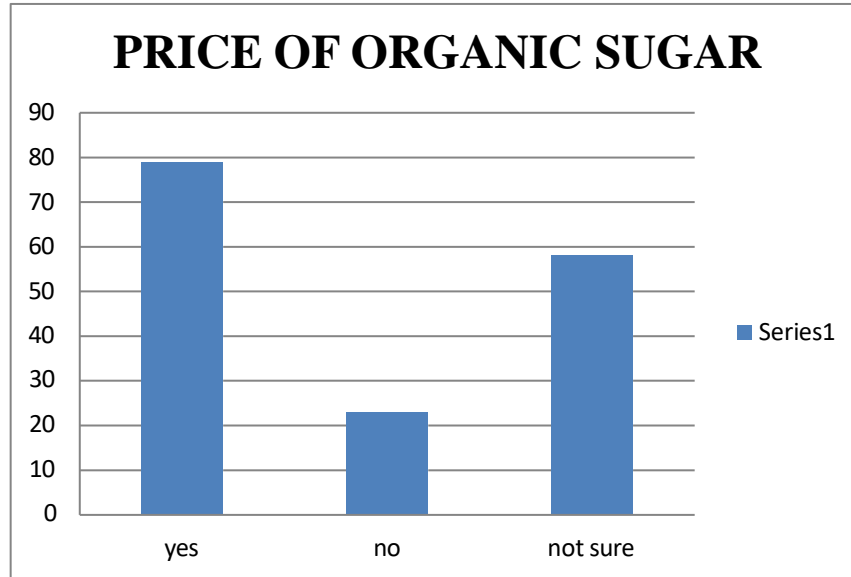


Table 4.13: Trust level towards product

Source: Primary Data

| Trust level | Frequency | Percent |
|-----------------------|------------------|----------------|
| Celebrity endorsement | 7 | 5 |
| Scientiific evidence | 37 | 23 |
| Quality | 107 | 66 |
| Brand image | 9 | 6 |
| Total | 160 | 100 |

INTERPRETATION:

The table reveals the classification of respondents which increases the trust level towards product within the sample size 160. 5% of the respondents had trust level based on celebrity endorsement.23% of the respondents trust level based on scientific evidence.66% of the respondents trust level based on quality.6% of the respondents trust level based on brand image.

Majority 66% of the respondents trust level based on quality.

Chart 4.13

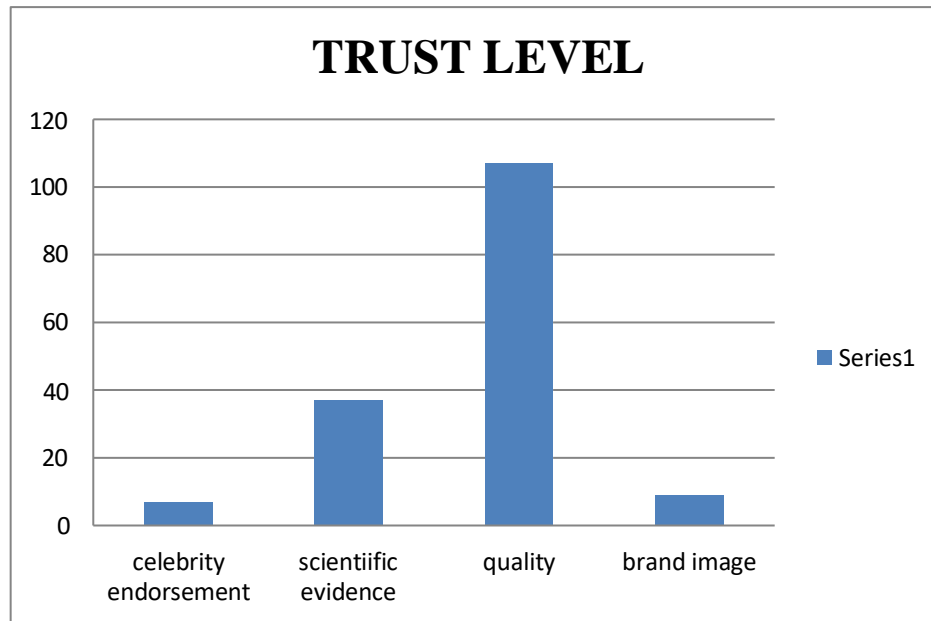


Table 4.14: First decide to buy organic sugar

Source: Primary data

| Decision | Frequency | Percent |
|------------------------|------------------|----------------|
| Curiosity | 12 | 8 |
| Doctors recommendation | 13 | 9 |
| Nutritional value | 110 | 68 |
| Environmental concern | 25 | 15 |
| Total | 160 | 100 |

INTERPRETATION:

The table reveals the classification of respondents for why they first decide to buy organic sugar within sample size of 160. 8% of the respondents decided to buy due to curiosity. 9% of the respondents decided to buy due to doctors recommendation.68% of the respondents decide to buy due to nutritional value.15% of the respondents decided to buy environmental concern.

Majority 68% of the respondents first decide to buy organic sugar due to nutritional value.

Chart 4.14:

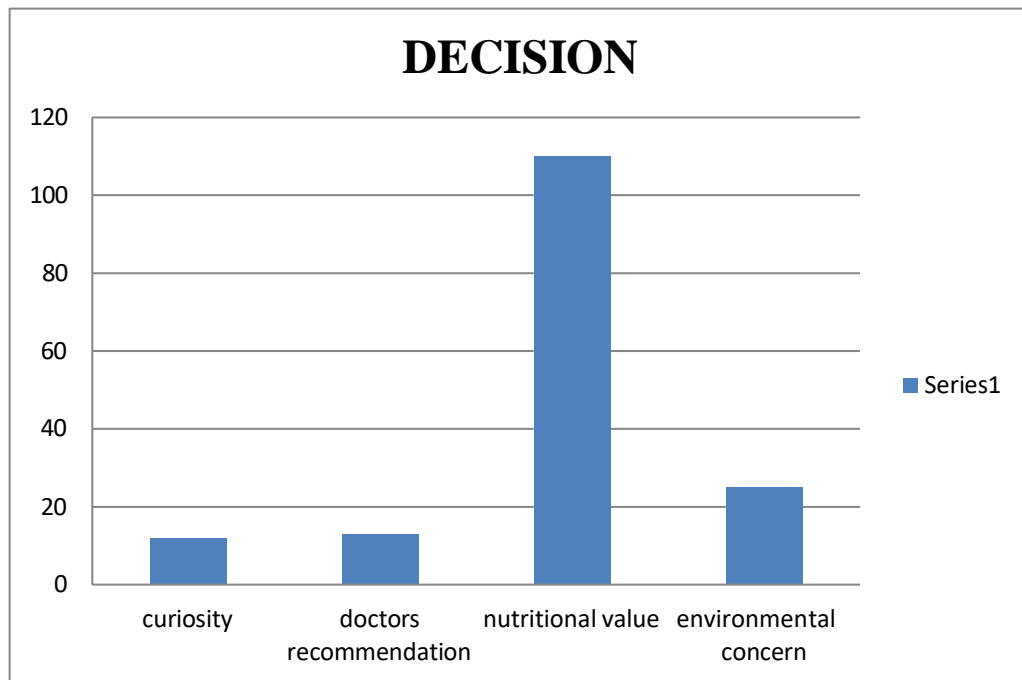


Table 4.15 : Do you read the label on the package

Source: Primary Data

| Label information | Frequency | Percent |
|--------------------------|------------------|----------------|
| Never | 37 | 23 |
| 1-25% of cases | 68 | 43 |
| 26-75% of cases | 28 | 18 |
| 76-100% of cases | 27 | 16 |
| Total | 160 | 100 |

INTERPRETATION:

The table reveals the classification of respondents who read the label/information on the package within the sample size of 160. 23% of the respondents never read the information on the package.43% of the respondents read the information on the package of 1-25% of cases.18% of the respondents read the information on the package of 26-75% of cases.16% of the respondents read the information on the package of 76-100%.

Majority 43% of the respondents read the label/ information on the package in 1-25% of cases.

Chart 4.15:

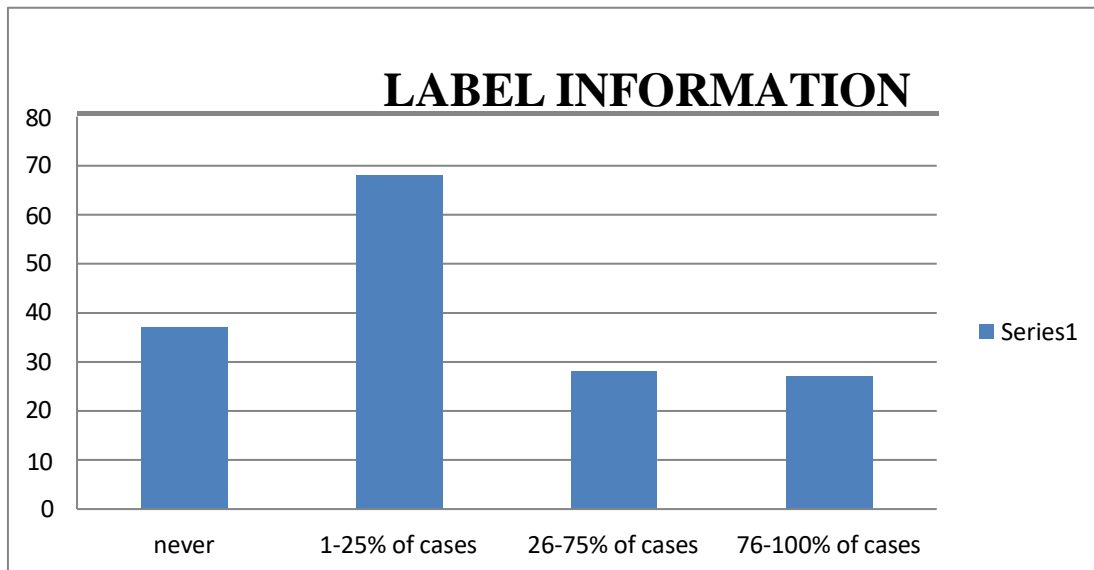


Table 4.16: Do you care if the sugar is organic/conventional?

Source: Primary data

| Organic or Conventional | Frequency | Percent |
|--------------------------------|------------------|----------------|
| Not at all/very little | 17 | 11 |
| A little | 53 | 34 |
| Average concern | 60 | 37 |
| Much | 30 | 18 |
| Total | 160 | 100 |

INTERPRETATION:

The table reveals the classification of the respondents of who care if the sugar you use is organic or conventional within the sample size of 160. 11% of the respondents are cared very little.34% of the respondents are cared little.37% of the respondents are cared in average concern.18% of the respondents are cared much.

Majority 37% of the respondents are cared an average concern about organic or conventional.

Chart 4.16:

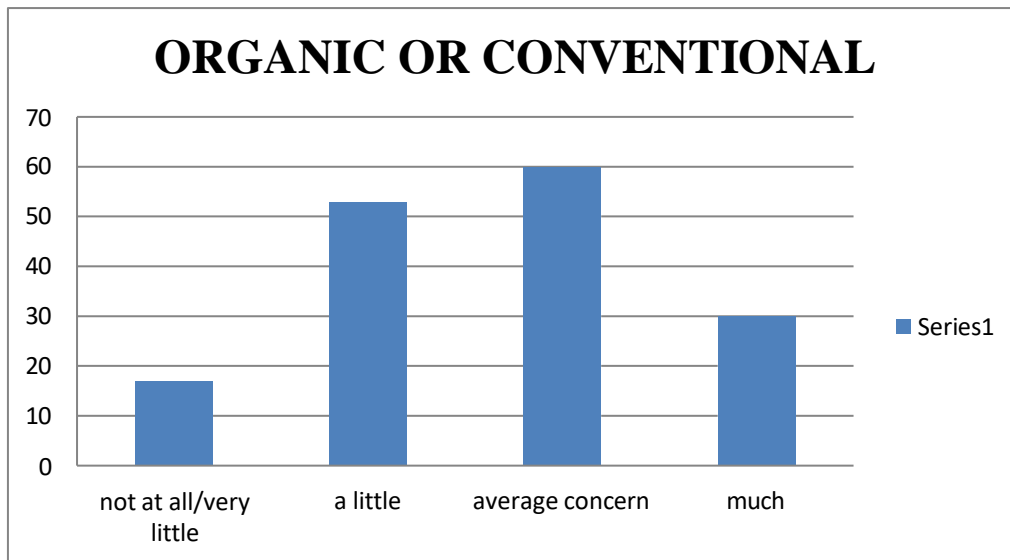


Table 4.17: Organic products you prefer

Source: Primary data

| Preference | Frequency | Percent |
|-------------------------------|------------------|----------------|
| Organic without organic label | 24 | 15 |
| Organic with organic label | 90 | 56 |
| It does'nt label | 14 | 9 |
| Anything | 32 | 20 |
| Total | 160 | 100 |

INTERPRETATION:

The table reveals the classification of respondents based on the preference of the consumer within the sample size of 160. 15% of the respondents are choosing organic without organic label.56% of the respondents are choosing organic with label.9% of the respondents choosing which is does'nt label.20% of the respondents choosing anything.

Majority 56% of the respondents are choosing organic with organic label.

Chart 4.17:

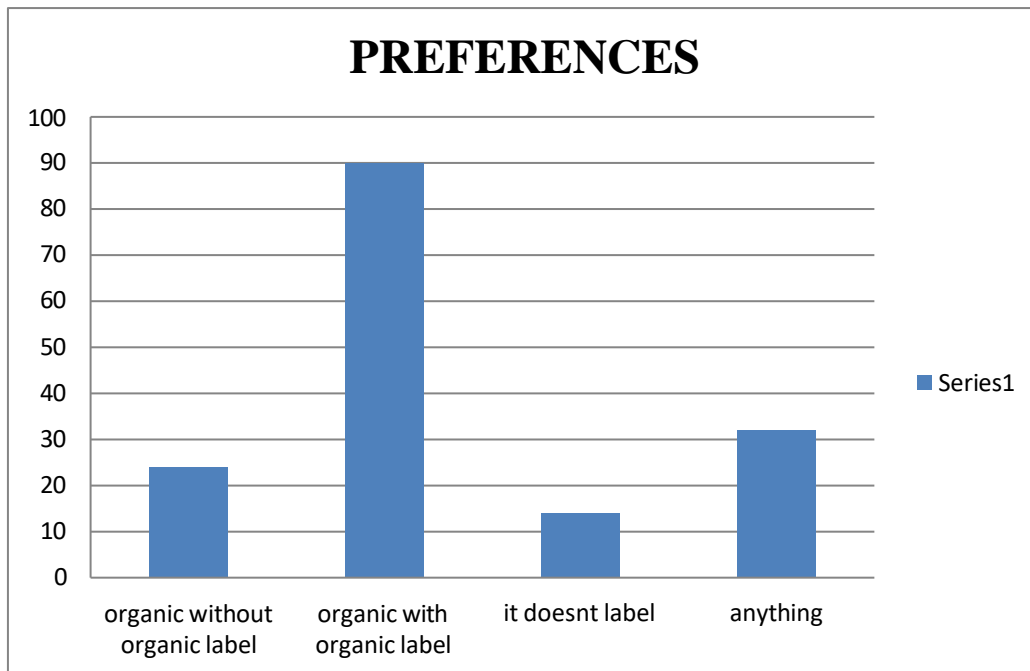


Table 4.18: Organic sugar gives more benefit

Source: Primary data

| Gives more benefit | Frequency | Percent |
|---------------------------|------------------|----------------|
| Agree | 89 | 55 |
| Strongly agree | 42 | 26 |
| Neutral | 26 | 16 |
| Disagree | 3 | 3 |
| Total | 160 | 100 |

INTERPRETATION:

The table reveals the classification of respondents where organic sugar gives more benefit within the sample size 160. 55% of the respondents are agreeing that organic sugar gives more benefit. 26% of the respondents are strongly agree that organic sugar gives more benefit. 16% of the respondents are neutral that organic sugar gives more benefit. 3% of the respondents are disagree that organic sugar gives more benefit.

Majority 55% of the respondents are agreeing that organic sugar gives more benefit.

Chart 4.18:

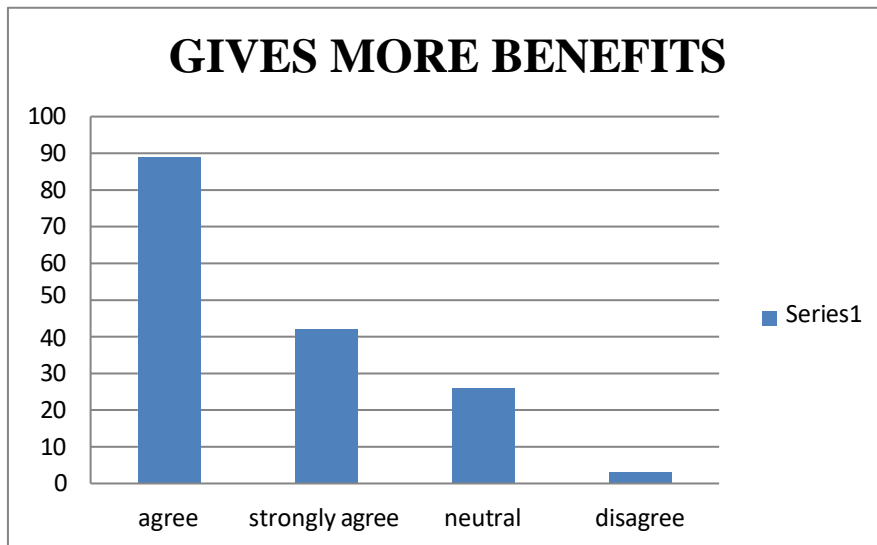


Table 4.19 : Organic products which one you prefer

Source: Primary data

| Try to buy | Frequency | Percent |
|-------------------------|------------------|----------------|
| Made locally | 69 | 43 |
| Made in other districts | 19 | 12 |
| Made in other state | 18 | 12 |
| It does'nt matter | 54 | 33 |
| Total | 160 | 100 |

INTERPRETATION:

The table reveals the classification of respondents based on the organic products they prefer within the sample size of 160. 43% of the respondents prefers locally made.12% of the respondents prefers made in other districts.12% of the respondents prefers made in other state.33% of the respondents doesn't matter about the production.

Majority 43% of the respondents prefers organic sugar made locally.

Chart 4.19:

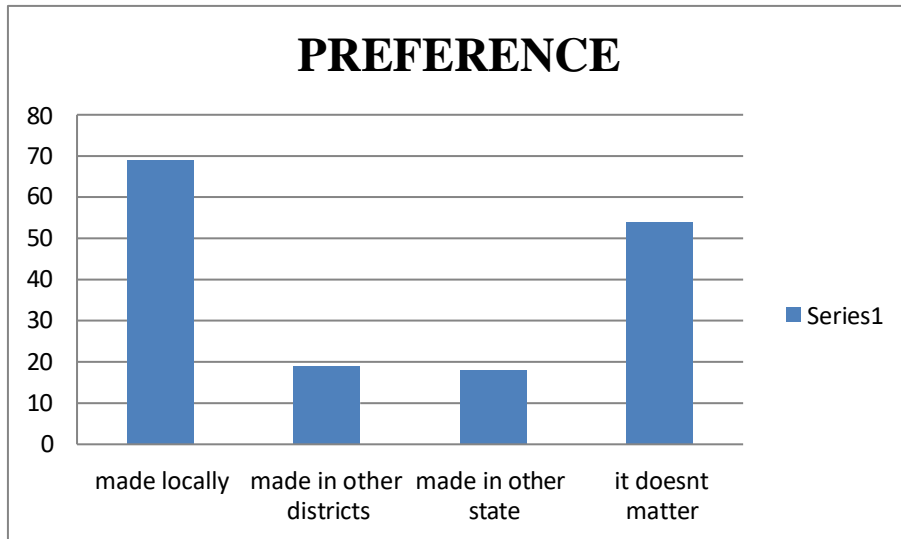


Table 4.20 : Organic or Conventional one

Source: Primary data

| Try to buy | Frequency | Percent |
|-------------------|------------------|----------------|
| Never | 24 | 15 |
| Rarely | 63 | 40 |
| Often | 56 | 35 |
| Very often | 17 | 10 |
| Total | 160 | 100 |

INTERPRETATION:

The table reveals the classification of respondents based on the buying behaviour within the sample size of 160. 15% of the respondents are never try to buy organic.40% of the respondents are rarely try to buy organic.35% of the respondents are often try to buy organic.10% of the respondents are very often try to buy organic.

Majority 40% of the respondents are rarely try to buy organic.

Chart 4.20:



Table 4.21: People buy organic sugar in idukki district.

Source: Primary data

| Idukki district | Frequency | Percent |
|------------------------|------------------|----------------|
| Few | 42 | 26 |
| Very few | 39 | 25 |
| Average number | 62 | 39 |
| Very high | 17 | 10 |
| Total | 160 | 100 |

INTERPRETATION:

The table reveals the classification of the respondents of the people who buy organic sugar in Idukki district within the sample size of 160. 26% of the respondents states that only few people buy organic sugar in Idukki district. 25% of the respondents states that very few people buy organic sugar in Idukki district. 39% of the respondents states very average number of people buy organic sugar in Idukki district. 10% of the respondents states that very high people buy organic sugar in Idukki district.

Majority 39% of the respondents states that average number of people buy organic sugar in Idukki district.

Chart 4.21

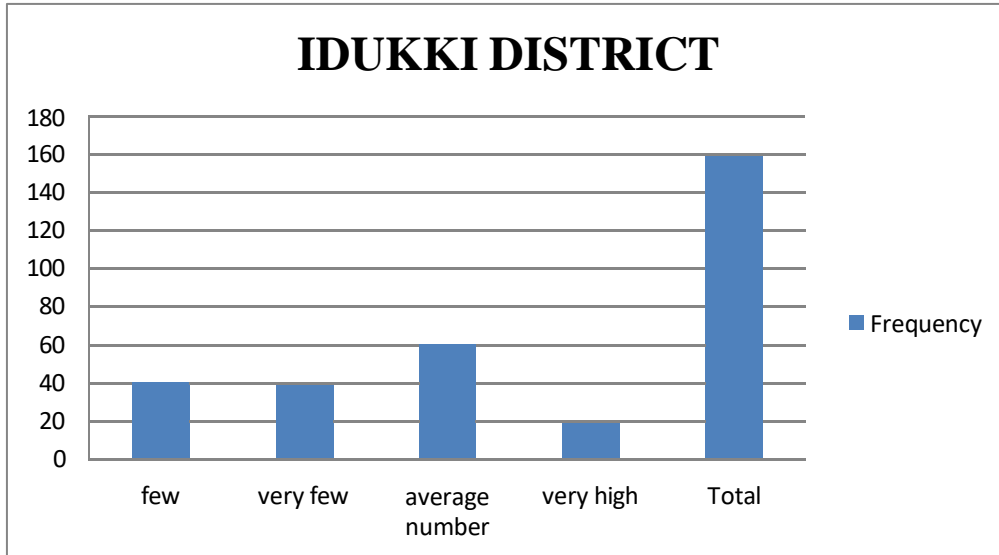


Table 4.22 : Willing to pay extra on organic sugar

Source: Primary data

| Willingness | Frequency | Percent |
|--------------------------|------------------|----------------|
| Not willing to pay extra | 46 | 29 |
| 1-10% | 66 | 42 |
| 11-50% | 29 | 19 |
| More than 50% | 19 | 10 |
| Total | 160 | 100 |

INTERPRETATION:

The table reveals the classification of the respondents who are willing to pay extra on organic sugar within sample size of 160. 29% of the respondents are not willing to pay extra on organic sugar.42% of the respondents are willing to pay by 1-10% extra on organic sugar.19% of the respondents are willing to pay by 11-50% extra on organic sugar.10% of the respondents are willing to pay by more than 50% extra on organic sugar.

Majority 42% of the respondents are willing to pay by 1-10% extra on organic sugar.

Chart 4.22

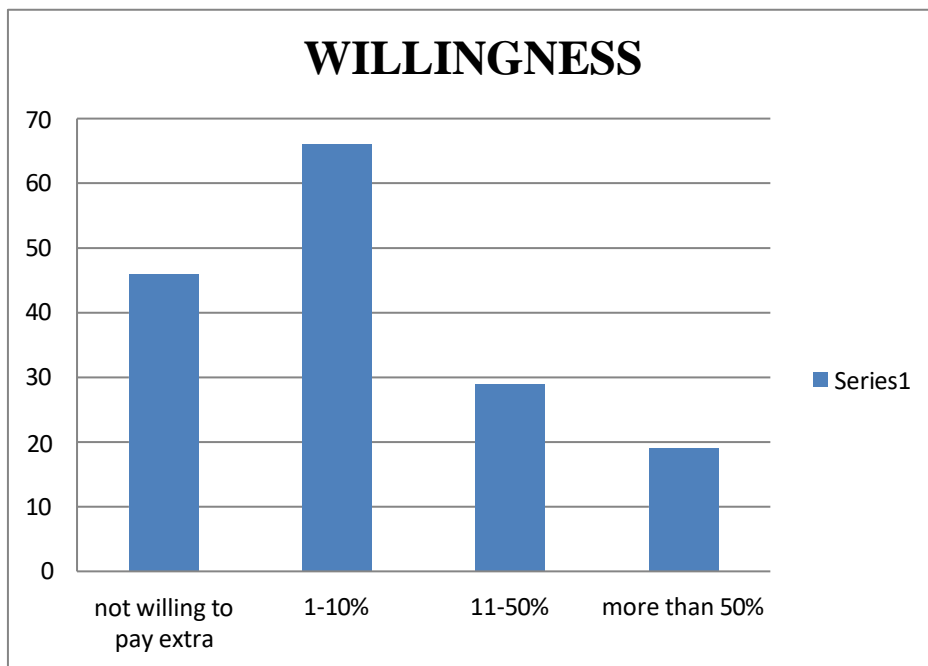


Table 4.23 Organic/ecological products do you use

Source: Primary data

| Ecological products | Frequency | Percent |
|----------------------------|------------------|----------------|
| Recycled paper | 75 | 47 |
| Cosmetics | 43 | 26 |
| Electric/hybrid car | 10 | 7 |
| Energy(solar etc) | 32 | 20 |
| Total | 160 | 100 |

INTERPRETATION:

The table reveals the classification of respondents based on their usage of other organic or ecological products within the sample size of 160. 47% of the respondents use recycled paper. 26% of the respondents use cosmetics. 7% of the respondents use electric/hybrid car. 20% of the respondents use energy(solar etc..).

Majority 47% of the respondents use recycled paper.

Chart 4.23:

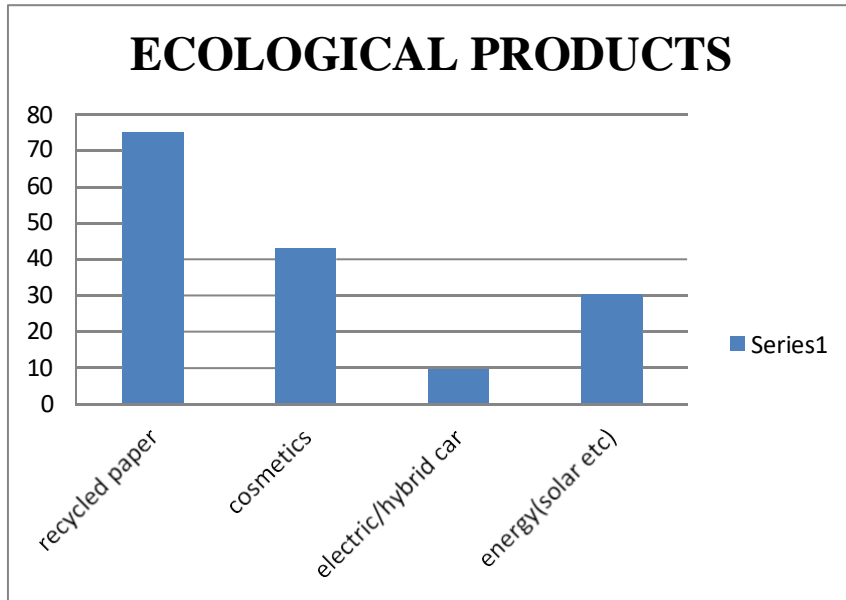


TABLE 4.24

CHI-SQUARE :

HYPOTHESIS

Ho: There is no relationship between income and the occupation

H1: There is a relationship between income and occupation

CASE PROCESSING SUMMARY

| | Cases | | | | | |
|--|----------------------------------|---------|---------|---------|-------|---------|
| | Valid | | Missing | | Total | |
| | N | Percent | N | Percent | N | Percent |
| | income per month * occupation | 161 | 100.00% | 0 | 0.00% | 161 |

INTERPRETATION

The table reveals that the classification of respondents on the basis of their monthly income within the sample size of 160. 19% of respondents are students so the income is nil. 45% of the respondents gets below 30000. 17% of the respondents gets below 40000. 19% of the respondents gets above 40000.

The table reveals the classification of respondents based on the occupation within sample size of 12% of the respondents are belongs to students. 73% of the respondents belongs to self employed. 5% of the respondents belongs to Govt.employee. 10% belongs to private employee.

INCOME AND OCCUPATION CROSS TABULATION

| | | occupation | | | | |
|------------------|-----|------------|---------------|---------------|------------------|-------|
| | | student | self employed | govt employee | private employee | Total |
| income per month | nil | 10 | 7 | 0 | 1 | 18 |

| | | | | | | |
|--------------|-------------------------------|----|-----|---|----|-----|
| | Rs.2000 0- Rs.3000 0 | 5 | 93 | 5 | 15 | 123 |
| | Rs.3000 0- Rs.4000 0 | 2 | 9 | 0 | 0 | 11 |
| | Above Rs.4000 0 | 3 | 6 | 0 | 0 | 9 |
| Total | | 20 | 120 | 5 | 16 | 161 |

TEST STATISTICS

| | OCCUPATION | INCOME PER MONTH |
|-------------|-------------------|-------------------------|
| Chi-Square | 213.683a | 227.944a |
| df | 3 | 3 |
| Asymp. Sig. | 0 | 0 |

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 40.3.

TABLE 4.25

ANNOVA – one way

HYPOTHESIS

Ho: There is no relationship between aware of organic and ecological product.

H1: There is a relationship between aware of organic and ecological product

| | | Sum of Squares | df | Mean Square | F | Sig. |
|--------------------------------|----------------|----------------|-----|-------------|--------|--------|
| aware of organic sugar | Between Groups | 2.4251 | 3 | 0.8084 | 8.0145 | 0.05 |
| | Within Groups | 15.836 | 157 | 0.1009 | | |
| | Total | 18.261 | 160 | | | |
| awareness about organic sugar | Between Groups | 1.1443 | 3 | 0.3814 | 0.274 | 0.8441 |
| | Within Groups | 218.55 | 157 | 1.392 | | |
| | Total | 219.69 | 160 | | | |
| buy organic sugar | Between Groups | 14.838 | 3 | 4.9458 | 5.062 | 0.0023 |
| | Within Groups | 153.4 | 157 | 0.9771 | | |
| | Total | 168.24 | 160 | | | |
| organic sugar in past one year | Between Groups | 5.4478 | 3 | 1.8159 | 2.5894 | 0.0549 |
| | Within Groups | 110.1 | 157 | 0.7013 | | |
| | Total | 115.55 | 160 | | | |

| | | | | | | |
|---|----------------|--------|-----|--------|------------|--------|
| have you been using organic sugar | Between Groups | 4.8679 | 3 | 1.6226 | 1.329 2 | 0.2669 |
| | Within Groups | 191.65 | 157 | 1.2207 | | |
| | Total | 196.52 | 160 | | | |
| kind of organic sugar do you buy | Between Groups | 0.1798 | 3 | 0.0599 | 0.280 8 | 0.8392 |
| | Within Groups | 33.51 | 157 | 0.2134 | | |
| | Total | 33.689 | 160 | | | |
| brands do you prefer the most | Between Groups | 1.6425 | 3 | 0.5475 | 0.562 2 | 0.6407 |
| | Within Groups | 152.88 | 157 | 0.9738 | | |
| | Total | 154.52 | 160 | | | |
| price of organic sugar continuously rises | Between Groups | 6.7684 | 3 | 2.2561 | 2.762 4 | 0.044 |
| | Within Groups | 128.23 | 157 | 0.8167 | | |
| | Total | 134.99 | 160 | | | |
| helps you to increase your trust level | Between Groups | 1.9022 | 3 | 0.6341 | 1.628 2 | 0.185 |
| | Within Groups | 61.141 | 157 | 0.3894 | | |
| | Total | 63.043 | 160 | | | |
| first decide to buy organic sugar | Between Groups | 2.7306 | 3 | 0.9102 | 1.734 8 | 0.1621 |
| | Within Groups | 82.375 | 157 | 0.5247 | | |
| | Total | 85.106 | 160 | | | |

| | | | | | | |
|--|----------------|--------|-----|--------|--------|--------|
| read label information | Between Groups | 10.345 | 3 | 3.4484 | 3.6075 | 0.0148 |
| | Within Groups | 150.08 | 157 | 0.9559 | | |
| organic or conventional | Total | 160.42 | 160 | | | |
| | Between Groups | 6.7259 | 3 | 2.242 | 2.8365 | 0.04 |
| | Within Groups | 124.09 | 157 | 0.7904 | | |
| | Total | 130.82 | 160 | | | |
| organic product which one you prefer | Between Groups | 3.7601 | 3 | 1.2534 | 1.3497 | 0.2603 |
| | Within Groups | 145.79 | 157 | 0.9286 | | |
| | Total | 149.55 | 160 | | | |
| believing that organic sugar gives more benefits | Between Groups | 22.868 | 3 | 7.6226 | 13.972 | 0.048 |
| | Within Groups | 85.654 | 157 | 0.5456 | | |
| | Total | 108.52 | 160 | | | |
| organic products which one will you prefer | Between Groups | 3.654 | 3 | 1.218 | 0.6808 | 0.565 |
| | Within Groups | 280.87 | 157 | 1.789 | | |
| | Total | 284.52 | 160 | | | |
| try to buy organic sugar instead of conventional one | Between Groups | 9.1941 | 3 | 3.0647 | 4.3057 | 0.006 |

| | | | | | | |
|--------------------------------------|----------------|--------|-----|--------|--------|--------|
| | Within Groups | 111.75 | 157 | 0.7118 | | |
| | Total | 120.94 | 160 | | | |
| buy organic sugar in idukki district | Between Groups | 7.0506 | 3 | 2.3502 | 2.5129 | 0.0605 |
| | Within Groups | 146.84 | 157 | 0.9353 | | |
| | Total | 153.89 | 160 | | | |
| willing to pay extra | Between Groups | 21.234 | 3 | 7.0781 | 8.698 | 2E-05 |
| | Within Groups | 127.76 | 157 | 0.8138 | | |
| | Total | 148.99 | 160 | | | |
| ecological products do you use | Between Groups | 5.8581 | 3 | 1.9527 | 1.452 | 0.2298 |
| | Within Groups | 211.14 | 157 | 1.3448 | | |
| | Total | 216.99 | 160 | | | |

INTERPRETATION

In the above table indicates that we accept HO, since the value is greater than 0.05 thus conclude that there is no relationship between aware of organic sugar and ecological products. From the Calculated value is less than 0.05 so that the null (HO) hypothesis is accepted and the alternative (H1) hypothesis is rejected.

Findings: From the above table indicates the Null hypothesis is accepted.

CHAPTER - V

FINDINGS, SUGGESTIONS & CONCLUSION

FINDINGS:

Percentage analysis:

- Majority 73.91% of the respondents are self employed.
- Majority 86% marital status of the respondents are unmarried.
- Majority 76% of the respondents are students so the income is nil.
- Majority 86% of the respondents are aware of organic sugar.
- Majority 30% of the respondents gets awareness from Social media.
- Majority 44% of the respondents buy organic sugar from the supermarket.
- Majority 57% of the respondents have purchased organic sugar in past one year.
- Majority 42% of the respondents using organic sugar less than 6 months.
- Majority 70.% of the respondents are using branded organic sugar.
- Majority 65% of the respondents prefer other brand.
- Majority 49.37% of the respondents are willing to pay extra amount when the price rises continuously.
- Majority 66% of the respondents trust level based on quality.
- Majority 68% of the respondents first decide to buy organic sugar due to nutritional value.
- Majority 43% of the respondents read the label/ information on the package in 1-25% of cases.
- Majority 34% of the respondents are cared a little about organic or conventional.
- Majority 56% of the respondents are choosing organic with organic label.
- Majority 55% of the respondents are agreeing that organic sugar gives more benefit.
- Majority 43% of the respondents prefers organic sugar made locally.
- Majority 40% of the respondents are rarely try to buy organic.
- Majority 39% of the respondents states that average number of people buy organic sugar in Idukki district.
- Majority 42% of the respondents are willing to pay by 1-10% extra on organic sugar.

- Majority 47% of the respondents use recycled paper

- Majority 60% of the respondents agree that organic sugar meet the health requirements.

Chi-Square:

a.0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 40.3.

Annova:

The p value 0.000 is lesser than 0.05($p < 0.05$),there is a significant between income of the respondents and occupation of the respondents.

SUGGESTIONS

SUGGESTIONS:

Organic sugar is grown without the use of synthetic pesticides or herbicides—which, according to Nutrients, is the better route for your health. This means that it's also better for the environment since no harmful chemicals are seeping into the ground or water supply. In view of the current prices for conventional sugar, organic raw cane sugar offers numerous benefits at an attractive price: no pesticide residues or chemical additives, gentle processing methods and more sustainable farming practices to maintain soil health and protect biodiversity for the long term.

CONCLUSION

CONCLUSION

In conclusion, as Most of the people in Idukki District are aware of organic Sugar. People are choosing Organic Sugar rather than conventional one., India's sugar industry stands as a formidable player on the global stage, fueled by innovation, government support, and the toil of countless farmers. As the respondents of the study says that Organic sugar is more healthier than the conventional one. The Global Organic Sugar market is anticipated to rise at a considerable rate during the forecast period, between 2024 and 2031. In 2022, the market is growing at a steady rate and with the rising adoption of strategies by key players, the market is expected to rise over the projected horizon.

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ANNEXURE

ANNEXURE

A STUDY ON CONSUMER SATISFICATION TOWARDS ORGANIC SUGAR WITH SPECIAL REFERENCE TO IDUKKI DISTRICT.

I'm Kavya M , Student of Avinashilingam University is doing PG Project Under the guidance of Dr.M.Kavitharani M.com.,MPhil.,PGDCA.,PhD. Assistant professor (Commerce).

QUESTIONNAIRE

1.Name

2.Age

3.Gender

- a. Male
- b. Female

4.Occupation

- a. Student
- b. Self employed
- c. Govt employee
- d. Private employee

5. Marital Status

- a. Married
- b. Unmarried

6. Income Per Month

- a. Nil
- b. Rs.20000-Rs.30000
- c. Rs.30000-Rs.40000
- d. Above Rs.40000

7. Are You aware of organic sugar?

- a. Yes
- b. No

8. Where did you get awareness about organic sugar?

- a. Advertisement
- b. Friends or Colleagues
- c. Neighbours
- d. Social Media

9. From where did you buy organic sugar?

- a. Directly from producer
- b. Specialized organic food shops
- c. Supermarket
- d. Other

10. Have you purchased organic sugar in past one year?

- a. Yes
- b. No
- c. May be

11. For how long have you been using organic sugar?

- a. Less than 6 months
- b. 6months-1year
- c. More than 1 year
- d. Not Used

12. What kind of organic sugar do you buy?

- a. Branded
- b. Non-branded

13. Which brands do you prefer the most while buying?

- a. Cococa
- b. Gulas
- c. MRT organics
- d. Other

14. If the price of organic sugar continuously rises then would you still purchase the same?

- a. Yes
- b. No
- c. Not sure

15. What helps you to increase your trust level towards products which claim to be organic?

- a. Celebrity endorsement
- b. Scientific evidence
- c. Quality
- d. Brand image

16. Why did you first decide to buy organic sugar?

- a. Curiosity
- b. Doctor's recommendation
- c. Nutritional value
- d. Environmental concern

17. How often do you read the label/information on the package ?

- a. Never
- b. 1-25% of cases
- c. 26-75% of cases
- d. 76-100% of cases

18. How much do you care if the sugar you use is organic or conventional?

- a. Not at all/very little
- b. A little
- c. Average concern
- d. Much

19. If you have to choose between the following organic products which one you prefer?

- a. Organic, without organic label
- b. Organic, with organic label
- c. It doesn't label
- d. Anything

20. Compared to white sugar are you believing that organic sugar gives more benefits.

- a. Agree
- b. Strongly agree
- c. Neutral
- d. Disagree

21. If you have to choose between the following organic products, which one will you prefer?

- a. Made locally
- b. Made in other Districts
- c. Made in other state

d. It doesn't matter

22. How often do you try to buy organic sugar instead of conventional one?

a. Never

b. Rarely

c. Often

d. Very often

23. In your opinion how many people buy organic sugar in Idukki district?

a. Few

b. Very Few

c. Average number

d. Very high

24. How much you are willing to pay extra on organic sugar compared to conventional one?

a. Not willing to pay extra

b. 1-10%

c. 11-50%

d. More than 50%

25. What other organic/ecological products do you use?

a. Recycled paper

b. Cosmetics

c. Electric/hybrid car

d. Energy(solar etc)

26. Did you consider nutrients of organic sugar meet the health requirements of people?

a. Agree

b. Strongly agree

c. Neutral

d. Disagree

27. Suggestion if any