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— SGGSCC —

Unwrapping the Packaging Industry

Industry Analysis Report 2021

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EXECUTIVE SUMMARY

Problem Statement

1. Comparing the packaging market in India with the Global market as well as their growth prospectus.
2. Tracing the evolution of the packaging industry from traditional retail channels to e-commerce channels.
3. Analysing the challenges of the packaging industry with special emphasis on environmental concerns.
4. Examining the technological innovations in the packaging industry and the future of sustainable packaging.

Report Deliverables

1. Understanding the packaging industry in detail along with its evolution and future prospects.
2. Comparing the growth of packaging industry in India and Globally.
3. Understanding why plastic is a material choice but also looking for alternatives which are better for the environment in the long run.
4. Analysing the impact of COVID19 on the packaging industry.
5. Understanding the difference packaging makes through case studies.

EXECUTIVE SUMMARY

Proposed Solution

Sustainable Packaging is the way to go so our report consists of various strategies and recommendations on how to shift to a much more sustainable method easily and effectively. This will help in reducing the public's dependence on plastic as a packaging choice. For example Amazon eliminated single-use, thin film plastics in packaging by replacing plastic materials like bubble wrap and air pillows with paper cushions and introducing plastic-free, biodegradable tape. They have adopted many more strategies to go greener.

Value

The India Packaging Market is expected to develop at a CAGR of 26.7 percent between 2020 and 2025, from \$50.5 billion in 2019 to \$204.81 billion in 2025. Packaging is one of India's fastest-growing industries, with annual growth rates of 22-25 percent, and the country is quickly becoming a preferred packaging hub. Over the projected period of 2022-2030, the sustainable packaging market is also expected to grow at a CAGR of 10.3%.

EXECUTIVE SUMMARY

Our Approach

The survey was carried out to provide a comprehensive overview of the packaging industry. Right from understanding the importance of packaging across sectors like agriculture, pharmaceuticals, cosmetics, FMCG, etc. to studying the future trends. The report focuses on covering various aspects such as economic, technological, legal, and environmental factors related to the industry. The packaging industry is one of the most growing sectors and has a lot of future scope due to its shift towards adopting smart and sustainable solutions to make product packaging both consumer and environment friendly.

Final Thoughts

That takes us to the conclusion that past and present waste and inefficiencies are driving the future of packaging, with a focus on customer satisfaction and sustainability. Those who reinvent packaging and consumer experience while also protecting the environment will be future leaders. Let us understand the 'how' behind it through the survey taken up by 180 Degrees Consulting, SGGSCC which aimed at providing an extensive answer to the question - How far has the packaging industry come, and what lies ahead?. While the survey provides an interesting snapshot of the packaging industry, let us see how it unfolds.

OVERVIEW

The science, art, and technology of enclosing or protecting products for distribution, storage, sale, and use are known as packaging. The process of creating, analysing, and making packages is also known as packaging. Packaging is a method for preparing items for travel, warehousing, logistics, sale, and end use that is coordinated. Packaging protects, preserves, transports, informs, and sells what it contains. It is thoroughly integrated into government, business, institutional, industrial, and individual use in many nations.

The packaging industry is one of the most growing sectors of the Indian economy and has a very important role across sectors like pharmaceuticals, agriculture, FMCG, cosmetics, food, beverages, etc. The growth the packaging industry has achieved and is expected to achieve in the coming years is due to ample reasons that summarise the importance of packaging for customers, and marketers.



IMPORTANCE OF PACKAGING

Packaging is of utmost importance whether it be for protection or for marketing so some of the uses of packaging are as follows :

Product Differentiation

Packaging helps in differentiating a product from the same product of a different brand. For example - the customer can differentiate a Lux soap from Dettol soap by looking at its package.

Idea About The Product's Quality

Packaging helps the customer to get an idea about the quality of the product packed. Psychologically, the customer believes that the more good the quality of the package, the more good the product.

Information Of The Product

Labelling, which is done on the package, provides all the important information like contents, precautions, manufacturing date, etc. of the product.

Storage, Protection and Transportation

Packaging, especially transportation packaging helps in storing, and transporting goods from place to place. The primary package protects the good from leakage, chemical change, moisture change, etc.

Attracts The Customer

Innovative and attractive packages gain the customer's attention towards the product.

LEVELS OF PACKAGING

An important thing related to the packaging industry that many people don't know is that packaging can be classified under three levels, namely, primary, secondary, and transportation packaging.

01 Primary Package

The packaging which is in the closest contact of a product is its primary package. In other words, it is the product's immediate container. Examples include the tube which contains the toothpaste, aluminium can of a soft drink, a bottle containing perfume, so on and so forth. This layer of packaging helps a lot in the protection of a product.



02 Secondary Package

The additional layer that is provided to protect the primary package is known as the secondary package. The secondary package also has an important role in the promotion of a product as the label is usually provided on this layer. This package is kept till the product is ready to use. For example - when we buy toothpaste, the outer cardboard box is disposed of.



03 Transportation Package

Tertiary or transportation packages are corrugated boxes, wooden crates, or plywood boxes that help in the storage and transportation of products. This type of packaging is generally meant to store the product in warehouses, and goddowns, and do not come in contact with the end customer.



In the terms of packaging units, the two main types of packaging materials used are flexible packaging and rigid packaging. Flexible packaging is the use of non-rigid materials like foil, plastics, and papers to create lightweight bags and pouches that are sealed using heat or pressure. It is efficient to produce, safe for the environment, and helps to increase the life of the product packed. Ziplocks, sachets, plastic pouches are examples of flexible packaging. Rigid packaging, as the name says, uses firm materials whose structure can't be changed easily. Some examples include glass jars, cans, cardboard boxes, etc. In comparison to flexible packaging, it is heavier and less economical.

ECOMMERCE PACKAGING

Ecommerce packaging often refers to packaging that is used to ship your products directly to your customers. With e-commerce growing due to covid-19, shipping boxes have now become a vital part of the unboxing experience for many consumers.

Many brands are now taking this opportunity to highlight their creativity and brand identity by fully customising their shipping boxes to stand out from their competition.

When looking at exactly what ecommerce ready packaging is, there are a few different elements to consider.



The Importance of Ecommerce packaging

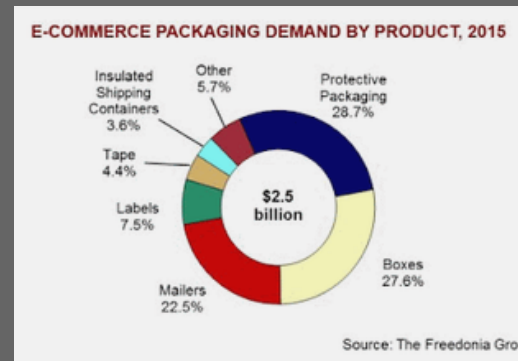
The right e-commerce packaging helps your business stand out. The wrong choice can lead to a multitude of issues ranging from damaged products to weakened brand connections and customer dissatisfaction. To create e-commerce ready packaging, one of the better guidelines to follow is Amazon's aim to create 'Frustration-free packaging' (FFP). This consists of creating packaging that is low waste, easy to open, and offers considerable protection during shipping without driving up costs.

Protection

The primary reason e-commerce packaging is essential is because it protects what you are trying to sell. Shipping and distribution will be a stress-free process for your business, and you will have a slew of satisfied customers that receive their product undamaged and ready to be used. Furthermore, well-protected products add significant value to your brand. There is no risk of refunds and exchange, and it creates a strong impression that serves your brand well overall.

Marketing

From a marketing standpoint, e-commerce ready packaging provides a lot of return if you make the proper investments. Through the right design, you can create a meaningful unboxing experience for customers that they will always remember – which is vital for building brand equity with customers. The right e-commerce packaging will be your differentiator and help customers distinguish the products from computer screens to their homes. It primes them for the product itself and creates a sense of excitement. All of this will serve as crucial components in building an authentic and long-lasting connection with your customers.



Product promotion

E-Commerce packaging also helps you display your products uniquely, giving your business an edge over the competition. For instance, if you are selling food products you will need to print essential information on the packages to inform customers of the ingredients and nutritional value. In addition to user guides, product packaging also promotes customer satisfaction as the information displayed helps shoppers make informed decisions when purchasing. The more customers understand the features and benefits of your products, the more they will be impressed with their purchase.

RETAIL PACKAGING

Retail packaging has the power to drive brick-and-mortar and ecommerce sales. A study by a market research firm found that packaging influences purchasing decisions for seven in 10 consumers. If you're running a low investment business, now might be the time to spend a little extra. Branded retail packaging can turn an otherwise "meh" shopping experience into a "yeah!" moment. And, in this highly visual era of social media, the right packaging can wow customers and translate into sales.

The Importance of Retail Packaging

Packaging is more than just something to put your products in. It can help protect goods, serve as a marketing tool, provide product information, and even influence sales.

Protect products

Packaging creates a barrier between your products, the box or bag they're carried in, and the elements. It's used to cushion products in transport, whether they're being carried out of your store by a shopper, or shipped across the world.

Packing peanuts, bubble wrap, crumpled paper, and cardboard go a long way in protecting products as they leave your store or warehouse and travel to their final destinations.

Provide product information

Packaging may be the first interaction a customer has with a product, making it a great place to provide essential details. You can use boxes and other external packaging to share useful information about an item, such as directions and suggestions for use, ingredients, specifications, contents, or warning notices.

For example, the label on a can of Heinz Baked Beans shares ingredients, nutrition and allergen information, and educational messaging about the importance of protein to a balanced diet.

Branding opportunity

Nicole Leinbach Reyhle, founder and publisher of Retail Minded, and co-founder of the Independent Retailer Conference, has the scoop on how packaging relates to branding:

"When a merchant invests in branded bags, they are also investing in continued marketing for their business. Once that bag exits their store, it begins a journey that may connect with simply a few or even many consumers along the way. From potential customers seeing it on the streets to the user of the bag repurposing it again, the journey may not be clear, but it certainly guarantees continued brand exposure."

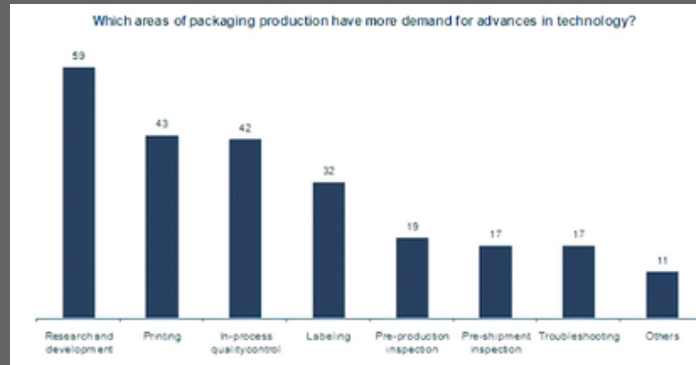
Custom packaging is so important these days! Especially if your company is marketed as a gift item—you're going to want the experience from doorstep and onward to be one that's memorable. It increases brand loyalty and it's basically free marketing; think of how many Blue Apron boxes you see on people's doorsteps every week. I found out about those after spotting one at a friend's house. Their box made me want to ask [about it]. [Custom packaging is] a great way to combine guerilla marketing techniques with company branding."

Environmental impact

The packaging you choose to use can help reduce the retail industry's effects on the planet. A research by IBM and the NRF found that "57% of consumers are willing to change their purchasing habits to help reduce negative environmental impact.

Ipsos found that three in four consumers are "more likely to buy products packaged in paper or cardboard than in other materials [like plastic] because they are better for the environment and less wasteful."

Beyond using materials that are easy to recycle, you can create packaging that customers can repurpose and reuse. For many retailers, a branded reusable bag is the gift that keeps on giving .



Influence sales

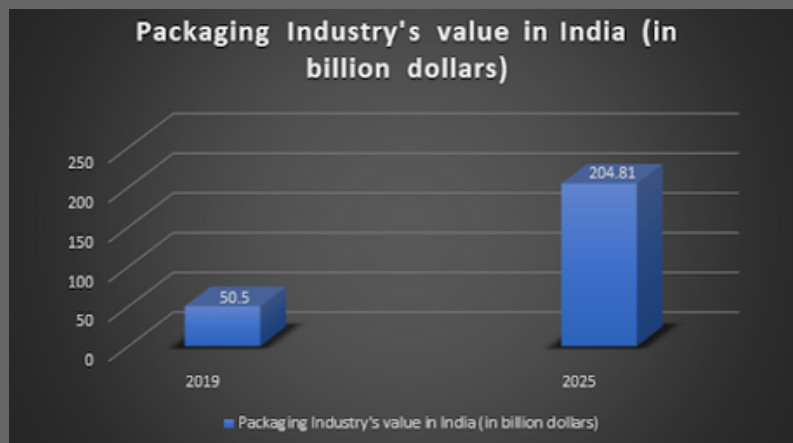
You already know that retail packaging influences purchasing decisions for seven in 10 shoppers. To drive the point even further, check out these stats from the Contract Packaging Association:

- More than 50% of web consumers say they'll make additional purchases from a business that uses above average or premium retail packaging.
- Nearly 40% of consumers say they'll regularly share product packaging that is "gifty" or "interesting" on social media.
- More than 75% of shoppers will recommend products they like to their friends and followers on social media.

Packaging is pretty powerful stuff.

GROWTH OF THE PACKAGING INDUSTRY IN INDIA

From 2020 to 2025, the India Packaging Market is estimated to grow at a CAGR of 26.7 percent, from \$50.5 billion in 2019 to \$204.81 billion in 2025. Packaging is one of India's fastest growing businesses, growing at a rate of 22-25 percent per year, and the country is quickly becoming a preferred hub for the packaging industry.



FACTORS AFFECTING MARKET GROWTH

Economic/Demographic Growth

India which is a key emerging market, the population will expand and the rate of urbanisation will continue to grow. This corresponds to higher consumer earnings for spending on consumer goods, as well as increased access to modern retail channels and a growing desire to engage with global brands and shopping habits. Thus, the future of this industry in India is very bright.

Packaging Technology

Sustainability will be an issue all around the globe including India. Several solutions are being developed to address this, including switching to alternative materials, investing in the creation of bio-based plastics, designing packaging to make it easier to recycle, and enhancing plastic waste recycling and processing.

Consumer Trends

With an increasing population the consumer base in India will rise thus leading to higher levels of growth in the Indian packaging industry.

Brand Owner Trends

Through 2028, more exposure to westernised lifestyles will hasten this transition in important developing economies. This will affect the Indian packaging industry as a key player in the packaging industry globally.

COMPARISON OF TRENDS

Pharmaceutical Packaging

India is one of the markets that produces a lot of plastic pharmaceutical packaging right now. Over the forecast period of 2021 to 2026, the Indian pharmaceutical packaging market is estimated to rise at a CAGR of 6.8%.

Retail Packaging

According to an ASSOCHAM-Forrester report, India's e-commerce revenue is expected to increase at the fastest rate in the world, climbing to \$120 billion in 2020 from \$30 billion in 2016.

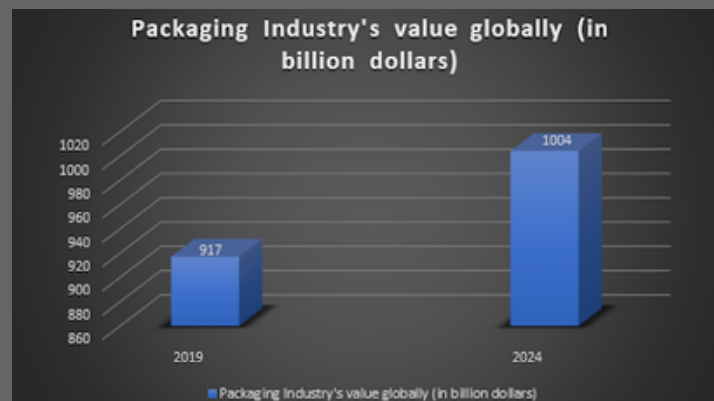
Food and beverage Packaging

Due to an increase in packaged food consumption and awareness, as well as demand for high-quality products, India has seen sustained packaging growth. The public's knowledge of packaged food, particularly packaged meal delivery, has grown. By 2023, it is expected to grow at a CAGR of 4.17 percent to \$142.2 billion.



GROWTH OF THE PACKAGING INDUSTRY GLOBALLY

With a compound annual growth rate (CAGR) of 2.8 percent, the worldwide packaging market will expand from \$917 billion in 2019 to \$1.05 trillion in 2024. Asia, followed by North America and Western Europe, is the world's greatest consumer of packaging.



FACTORS AFFECTING MARKET GROWTH

Economic/Demographic Growth

The global economy is expected to perform relatively well over the next decade, boosted by growth in emerging economies. Short-term interruptions are possible as a result of Brexit and any escalation of trade battles between the US and China. However, incomes are likely to rise in general, allowing consumers to spend more on packaged products.

Packaging Technology

Companies will address environmental concerns with an expansion in flexible packaging, which is being driven by consumer desire for lighter, more convenient, and portable items. Several solutions are being developed to address this, including switching to alternative materials, investing in the creation of bio-based plastics, designing packaging to make it easier to recycle, and enhancing plastic waste recycling and processing.

Consumer Trends

The global market will continue to grow as more people shop online, resulting in increased demand for specialised packaging and packaging products.

Brand Owner Trends

There will be a greater role for packaging in helping brand owners to protect against fake or counterfeit goods, via increased usage of technological innovations. Many brands in the fast-moving consumer goods business are becoming more international as companies seek out new high-growth sectors and regions.

COMPARISON OF INDIAN AND GLOBAL TRENDS

Pharmaceutical Packaging

The global pharmaceutical packaging market accounted for \$ 88,880 million in 2019, and is expected to reach \$ 144,233 million by 2027, registering a CAGR of 6.1% from 2020 to 2027. In a decade, the worldwide pharmaceutical packaging business is expected to double to \$149 billion.

Retail Packaging

The retail-ready packaging market was worth USD 63.9 billion in 2020 and is predicted to grow at a CAGR of 4.35 percent from 2021 to 2026, to reach USD 90.9 billion by 2026.

Food and beverage Packaging

The market is projected to grow from USD 338.34 billion in 2021 to USD 478.18 billion in 2028 at a CAGR of 5.1% during the 2021-2028 period. The rapid surge in CAGR is due to the demand and expansion of this market, which will return to pre-pandemic levels once the pandemic is gone.

IMPACT OF COVID-19 ON THE PACKAGING INDUSTRY

The emergence of Covid-19 has altered the world in which we live. As the coronavirus outbreak spread, various companies that assisted in providing fundamental needs, such as securely delivering food and supplies to consumers, were progressively impacted. Coronavirus has had a wide-ranging impact on the packaging industry. While it slowed the Packaging Industry's progress toward a more sustainable environment, it also resulted in a significant increase in demand for packaging for food, healthcare products, and other items. Changes brought about by the Covid-19 will have long-term consequences. However, in order to adapt to these new realities, the packaging industry has adopted new technologies and procedures.



How has the different segments of the Packaging Industry fared during COVID-19?

Food and Beverage Packaging

The Food and Beverage segment plays a significant role in the Packaging Industry. The epidemic of Covid-19 has had a mixed influence in this area. Demand in this segment has shifted due to the closure of restaurants and food service outlets around the globe with consumers moving to online grocery stores and take-away packaged food and drinks. This sector has been affected to a large extent by disruption within the food supply chain throughout the world. Demand for premium good packaging has drastically declined as consumers became concerned about their expenditures.

Healthcare Packaging

Healthcare Packaging is the least affected segment of all. Healthcare Packaging companies worked together to ensure that the important medical supplies were packaged, transported and delivered safely and quickly. Driven by Covid-19, the growth of Pharmaceutical Industry and increase in demand for medical supplies and drugs, have created a positive impact on the Healthcare Packaging market.

Cosmetics Packaging

The Covid-19 pandemic led to the sudden shutdown of manufacturing activities across the globe. A shift in consumer preferences was observed with customers wanting safer products with higher integrity. Cosmetics Packaging has been severely impacted by the downturn, with global consumers wanting to spend less on beauty products.

Adapting To Change In Consumer Preferences

With the advent of the novel coronavirus, there have been significant shifts in consumer behaviour. As stores closed during the worldwide lockdown, the e-commerce platform boomed and consumer demand for safe and durable packaging has increased. The packaging business adapted to new consumer trends with breakneck speed, putting itself in a position to prosper. Consumer trends shifted towards pre-packaged fresh foods which carried minimal risk of transmission. Health and hygiene became the primary objectives of consumers while deciding the brands they wished to buy. More people are now disinfecting food and its packaging to cater to their emotionally driven behaviour. To allay these fears, packaging businesses informed consumers of the sanitary process that the items went through before being delivered.

Touch Free Packaging

Touch free packaging was created in an effort to develop novel solutions. In a September poll of over 1500 consumers performed by Sealed Air, it was discovered that consumers were eager to interact with QR codes on packaging if it supplied certain types of information. Consumers mostly wanted to know about the environment in which the product was manufactured and packaged. Sealed Air also discovered that consumers were drawn to products that claimed to be packaged in a touch-free environment.



The Revival of Plastic and Lifted Bans on Plastic

Plastic once again became the focus of attention with the emergence of coronavirus. When Covid-19 began, consumers became concerned that a person could be infected by the virus by touching surfaces that have been in contact with an infected person. Recent researches evaluated the survival of coronavirus on different surfaces and reported that the virus can sustain itself for upto 72 hours on plastic and upto 24 hours on cardboard. In addition, plastic is one of those materials that could extend the shelf life of food and pharmaceuticals products, especially when consumers wished to stock up their resources due to closure of stores around the globe. Several countries paused and lifted bans on single use plastics as an immediate response for health and safety of people across the globe. Single use plastics, although a false disposable plastic solution, witnessed an unparalleled surge during Covid-19 with Medical Industry being its largest user. Regardless of how plastic has assisted the world, the resulting waste from single use plastics has intensified pressure on an already out of control global plastic problem. Studies have shown that Covid-19 pandemic generated 8 million tonnes of plastic waste. A smaller portion will go into the open ocean, eventually to be trapped in the centres of ocean basins, which can become garbage patches, and accumulate in the Arctic Ocean, the studies further added.



LAWS GOVERNING THE PACKAGING INDUSTRY

Packaging Industry has a comprehensive Legal Framework that defines the laws related to packaged commodities, their labels, metrics and specified standards. In India there are three laws which govern the Packaging and Labelling Procedures:

LEGAL METROLOGY ACT, 2009

Legal metrology refers to the part of metrology that deals with units of scale and scale, methods of measurement and weight and measurement of packaged goods, in relation to mandatory technical and legal requirements aimed at ensuring public assurance in terms of safety and accuracy of weights and measurements.

BIS STANDARDS FOR PACKAGING

Several departments in the Bureau of Indian Standards are responsible to adhere to certain packaging standards. According to the BIS, the most widely used materials in the industry and authorised by the Bureau are Plastic, Metals, Glass, Paper. Products are delivered under certification by the departments, primarily the Department of Consumer Affairs.

FSSAI FOOD PACKAGING RULES

Several departments in the Bureau of Indian Standards are responsible to adhere to certain packaging standards. According to the BIS, the most widely used materials in the industry and authorised by the Bureau are Plastic, Metals, Glass, Paper. Products are delivered under certification by the departments, primarily the Department of Consumer Affairs.

FOOD PACKAGING REGULATIONS

The regulations associated with Food packaging are governed by the 'FOOD SAFETY AND STANDARDS (PACKAGING AND LABELLING) REGULATIONS, 2011.' Specifically, the following guidelines (some out of the total) are prevalent, when it comes to food jurisdiction:

Containers made of plastic material must abide by the Indian Standard Specifications, which are utilised as electrical or packaging materials or packaging or partially or completely. In the case of canned products, all containers are to be safely packed and sealed. The tin container should be free of large teeth, rust, piercings and distortions. Tins should not cause leakage.

In the case of dairy products, bottle-filling should be done mechanically and containers should be sealed automatically. Immediately after packing, dairy products are to be placed in rooms provided for cold storage. In case of food and vegetables, every bottle in which any fruit product is packed should be so sealed that it cannot be opened unless the licence no. is destroyed and the special identification mark of the manufacturer to be displayed on the top or neck of the bottle.

In the case of water, it should be packed in clean, clear, colourless, transparent and non-abrasive bottles made of polyethylene (PE) or sterile polycarbonate or sterile glass. In the case of medicinal drugs, it is important to mention its generic name along with the scientific name. The material used in packaging should be non-abrasive and sealed.

Foreign Regulations of Packaging and Labelling

The extent and rigidity of packaging rules vary from country to country. The prime areas to study are European Union, USA and other Asian Countries.

EUROPEAN UNION

The guidelines in the EU include all types of packaging items placed on the EU market as well as all packaging waste. The guidelines control the chemicals and heavy metals present in the packaging too.

REACH is an EU law that regulates substances including chemical, heavy metal in the EU market. It also applies to packaging materials, for example, cardboard and paper, PE and other plastics, metal cans, and plastic bottles.

UNITED STATES

FPLA USA is related to the total amount of information contained in packages, goods, or goods sold on a weight or scale basis. The U.S. The Food and Drug Administration (FDA) regulates food packaging and labelling.

The purpose of the laws is to improve the safety of the food that is distributed throughout the United States and to keep consumers informed about the foods they eat.

Foreign Regulations of Packaging and Labelling

CHINA

The Packaging Act in China is governed by a number of principles such as displaying a product quality inspection certificate, displaying in Chinese product name and manufacturer name and address. It's required to display the details, quality, name and content of the major product ingredients as related to properties and requirements of the product; where any issue needs to be disclosed to consumers, marks are to be made on the external package, or relevant information is to be provided to consumers ahead of time.

RUSSIA

In Russia, there are no strict packaging rules but standard guidelines for materials used as packaging materials. The package must be complete and closed but must be able to be opened by the police.

Label rules include that product labelling must be in Russian. Other official languages for specific state subjects or minorities may be selected.

CHALLENGES FACED BY THE PACKAGING INDUSTRY

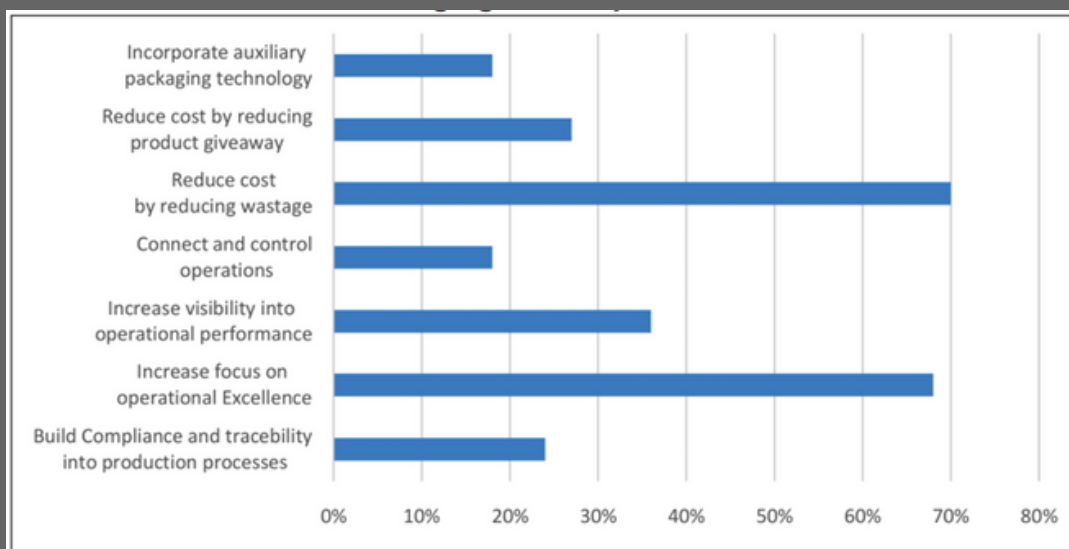


When we think about packaging, most of us would get an image of packaging material made of plastic. This dominance of the plastic industry has made it inevitable to pay attention to the environmental concerns associated with the packaging industry. Under this pressure, the packaging industry is mutating. Rapidly changing technology and rising prices of raw material have become the key consequences of this process. Food packaging forms the majority of this industry's output, the associated health concerns thus exacerbate the challenge.

The key challenges faced by the packaging industry are discussed.

1. Rapid Technological Changes

Machinery in the packaging sector is constantly evolving to cope with the hanging dynamics of the markets and consumer preferences. Recent innovations such as smart-packaging, printing techniques, application of robotics and machineries, automation architecture, software systems and interfaces, individually customisable packaging, 100% recyclable, even compostable and edible packaging require the sector to be redesigned.



However, a large share of the packaging industry is formed by small players in the unorganised sector, who are unable to keep up with the rapid automation and technological changes. They neither have the required funds nor the technical know-hows and skillset to operate on the upgraded technology. Moreover, the inadequate research on these new developments raises health concerns, especially in food packaging.

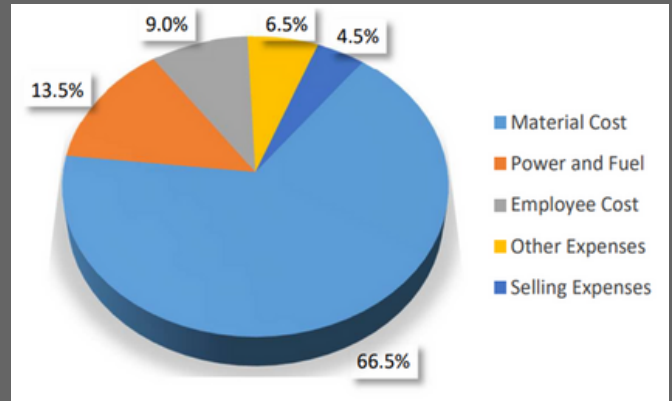
The introduction of new technology is not as simple owing to these factors:

- Large number of stakeholders involved
- Complicated machinery and process
- It requires large investments
- Unequal distribution of costs and benefits among chain partner

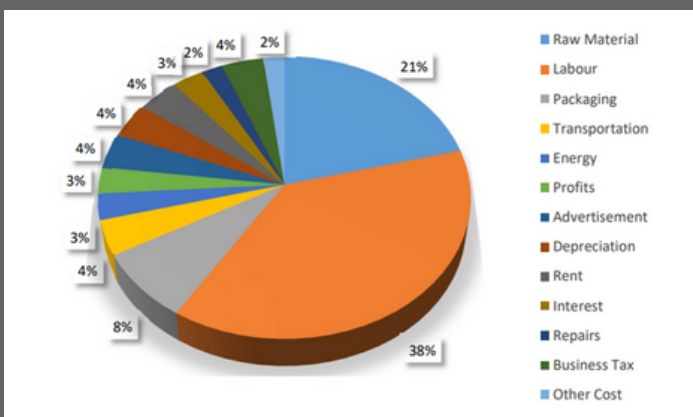
2. Shortage and Rising Cost of Raw Material

The various raw materials that are most commonly used in packaging are: plastic, paper, cardboard and glass. Raw materials like Polyethylene (PE), Polyethylene Terephthalate (PET), Polypropylene (PP), and Polyvinyl Chloride (PVC) are used extensively in the plastic packaging.

The procurement cost of these raw materials has become quite high due to short supply and increased demand. Also, in the case of plastic packaging, the volatility in crude oil prices has an impact on the manufacturing cost.



Raw material cost dominates the operating cost in the packaging industry, it forms at least about 40-50% of the total cost, with some variation with regards to the kind of packaging. This is especially high in India due to an additional limitation, that is, inadequate refinery sector. Combined with the high depreciation and obsolescence costs it is constantly diminishing the net margins in the industry.



3. Non-Availability and Rising Cost of Skilled Manpower

The packaging industry is labour intensive and requires skilled manpower for design development and innovation. This is one of the biggest challenges of the industry, especially in India. This lack is most prominent in the top management positions. There are very few institutes providing courses in packaging technologies. Moreover, training centres and certificate courses available for the same are also quite less.

Thus, there are very few skilled professionals who can be employed at the top management positions. As per the industry sources, more than 35000 packaging experts are required currently for the Indian packaging industry, while only 1.5 percent of it are produced each year. This leads to a large imbalance between their demand and supply and thus, they are available at a high cost.

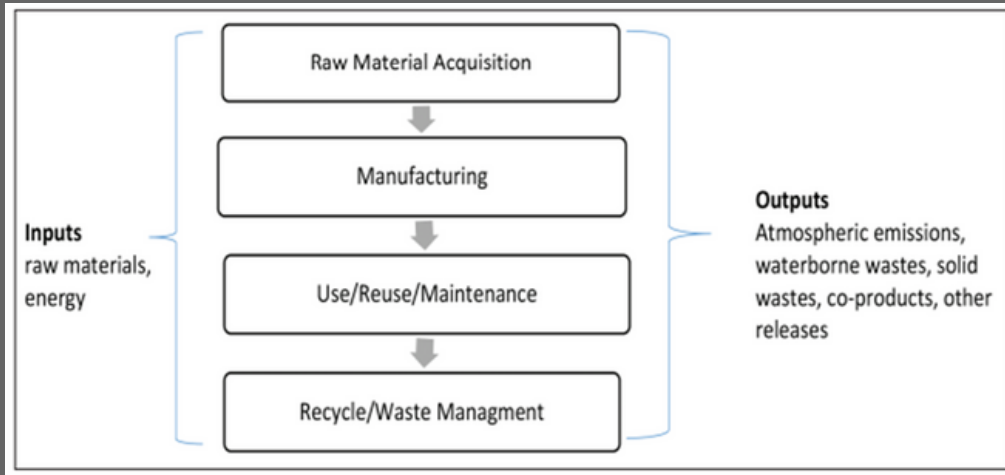
4. Packaging Transportation

One of the main reasons why packaging is required is so that products can be transported. Transportation is instrumental in every industry but has a unique importance when it comes to packaging. There are 2 main concerns with regards to this, they are:

- **Increasing Stacking Strength-** A large number of goods are transported together. They are stacked in huge columns. This places pressure on the lower rows. Thus, the outer packaging needs to be rigid to ensure that no harm is caused to the product. This will also help in reducing damage in case of accidents.
- **Reducing Transportation while ensuring effective Delivery-** The cost of transportation is determined by 3 aspects: Shape, weight and quantity. To reduce it the packaging needs to be done in a way that minimises the weight and the shape is suitable as well. The manufacturer needs to procure the benefit of transporting a large quantity in one go. However, the design cannot be compromised in an attempt to reduce cost as it is instrumental in consumer satisfaction.

5. Environmental Concerns

The packaging industry has direct as well as indirect impact on the environment. The direct impact is from the material produced while the indirect impact is the pollution caused, just like other industries.



While we have often heard that we should recycle paper, plastic, glass etc., which are the most common packaging materials, it is easier said than done as the process of recycling comes with many limitations. It is difficult to separate combinations of material, there are risks of contamination, not all materials are suitable for recycling, the recycled material is generally weaker and it is a costly process.

The biggest concern is the dominance of plastic in the industry. Plastic comes in countless forms, colours and qualities. It caters to almost all needs of the packaging industry in the most cost effective way possible.

Use of Plastic for Various FMCG Products in India

However, this material of choice is a menace for the environment. The plastic processing industry is estimated to be more than 22 million tonnes (MT) by volume and nearly half of this constitute single use plastic. India generates as much as 10000 tonnes per day of plastic waste with per capita generation of up to 5.7 kg of plastic waste per annum, which is growing annually at a rate of 8-10 percent. This has put immense pressure on the industry to reduce the usage of plastic, but there seems to be no viable alternative.

6. Differentiating Products through Packaging

Packaging designs are continuously evolving with developments in science and technology. The designs are required to be suitable from the point of view of both functionality and printing. With increasing market competition, manufacturers use the packaging as a means of marketing. Thus, it has become necessary to ensure product differentiation through packaging.

In India, innovation in terms of packaging design is considerably low. India is a price sensitive market. The modern packaging technologies are quite expensive and would largely impact the product cost. So to remain cost effective, manufacturers often use poor quality material and old technologies.

7. Excessive Packaging

When extra paper or plastic is used in packaging, or a box larger than what is required, the product is said to be excessively packaged. Companies like Amazon, that sell a large variety of products that come in various shapes and sizes, often find it difficult to find the right packaging. This poses a problem for the manufacturer as well, as they are expected to produce packaging material for all products. However, this adds to the production cost as the economical benefit of producing the same item in a large quantity cannot be reaped.

Moreover, if any extra packaging is used to add to the aesthetic appeal it is considered as excessive packaging. This further aggravates the problem of product differentiation through packaging.

Sustainability is an issue that many are passionate about and the excessive use of plastic, especially single use plastic, may trigger them and have an influence on their decision of product and brand.

CURRENT TECHNOLOGICAL INNOVATIONS

Despite the Packaging industry being hundreds of years old, it constantly goes through ground-breaking innovations time and time again which change the consumer experience by manifold. The packaging industry is adopting smart and sustainable solutions to make product packaging both consumer and environment friendly.

The following are some of the factors that affect the packaging industry in some way or another-

- Technological innovations in packaging
- Effect of innovations in allied sectors on packaging industry
 - 1.Changes in Manufacturing & Operations
 - 2.Changes in Shipping and Logistics
 - 3.Changes in the ecommerce industry

With higher sales of consumer electronics and zero plastic waste objectives, innovations such as 3D printing, automated processes, and circular economies will gain the attention of brands and consumers through 2022 and beyond. Some of the prominent developments in the packaging industry include:

Technological innovations

1. Dissolvable packaging

Plastic has been the go to material for packaging for decades now due to its durability and versatility to be converted into any shape and size but the use-dispose model followed by consumers has led to enormous piles of waste. This is why over the last decade, both businesses and consumers are moving towards sustainable packaging.

The key challenge for businesses is to opt for packaging that both fulfils the basic functions and are also sustainable. **Edible packaging** is a revolutionary packaging industry trend that addresses both of these challenges.

Edible food packaging is a type of packaging that is designed to be eaten or has the ability to biodegrade efficiently like the food that it contains. It comes in many forms and is constantly being improved and innovated to be made from many different types of substances.



Raw materials extracted from algae, natural sweeteners and natural dyes made from skins of fruits and vegetables show a lot of potential for offering the food industry a variety of options with regards to colours, designs and more.

Edible water bubble has been a trending innovation in this industry for a long time now.

According to recent estimates, the edible packaging industry is growing at the rate of 6.81% from 2017 to 2023. This innovative way to combat plastics is becoming a norm sooner than we think!

We have seen a huge emergence of **water dissolvable packaging** for dishwashing and laundry detergents. Alternative materials for plastic like corn starch based packaging have been gaining momentum in the past few years.

For example, Bakeys is an Indian edible cutlery company which provides a waste-free and chemical-free alternative to disposable plastic, wood, and bamboo cutlery. The founder, Narayana Peesapaty, created Bakeys out of concern for groundwater depletion and the danger of plastic toxins on human systems. The cutlery is made of a blend of sorghum, rice, and wheat flours, completely biodegradable, and vegan-friendly.



2. Space Saving Packaging

Storing and transporting mass amounts of packaging is also seen as less eco-friendly as unique and unnecessary packaging shapes take more shelf space and ultimately end up in a landfill. We are looking at more square or rectangular packaging for stacking and storage purposes.

Boxed beverages also tie into sustainability because the use of plastic for the production of boxed drinks is significantly reduced, leaving it to paper and aluminium to do the job.



3. Self Chilling Cans

Self Chilling cans are gaining a lot of traction now-a-days because people don't like to wait. Self-chilling cans eliminate the need to wait for your drink to get cold, whether it is via refrigerator, freezer, or ice cubes. This means that you no longer will need ice cubes watering down your beverage.

Self chilling cans are simple to use: turn the can upside down, twist the base off to release liquefied CO2 that acts as the active coolant, and wait for about seconds for a nice and refreshing drink. The drink, which is stored in a 100% recyclable can, is lowered to about thirty degrees.



4. Self heating Food packets

This new type of packaging design could open the doors to more on-the-go meals that make it easier for consumers to buy meals without the need for a source of heat.

To start the water-activated heating pack, all you have to do is add cold water and 15 minutes later your food will be hot and ready to eat. This new packaging design innovation is perfect for meals on the go when you want a fresh and hot meal but don't have a microwave to heat up your food. It can also be used for camping, long travels, or when you don't want to do dishes after your meal.



5. Aluminium Grows in Beverage Sector

Moving from rigid plastic bottles to aluminium cans in the beverage sector was another important change. PepsiCo announced last year that its AQUAFINA water brand will offer aluminium can packaging in U.S. food service outlets, and the brand was expected to test the move in retail this year.

6. Biodegradable Packaging

Plastic is the most commonly used packaging material since the early 20th century, however, its slow decomposition rate is causing widespread environmental problems.

As consumers become more aware of the negative consequences of single-use plastic packaging, they are demanding eco-friendly packaging.



Biodegradable packaging and films made of starch, cellulose, PLA, polyhydroxybutyrate (PHB), and polyhydroxyalkanoates (PHA) are gaining traction as suitable alternatives to traditional plastic packaging.

Apart from this, plant-based packaging made of sugarcane, coconut, hemp, and cornstarch can also replace plastic packaging. These innovations are economical for businesses to adopt and reduce their impact on the environment.

7. Nanotechnology

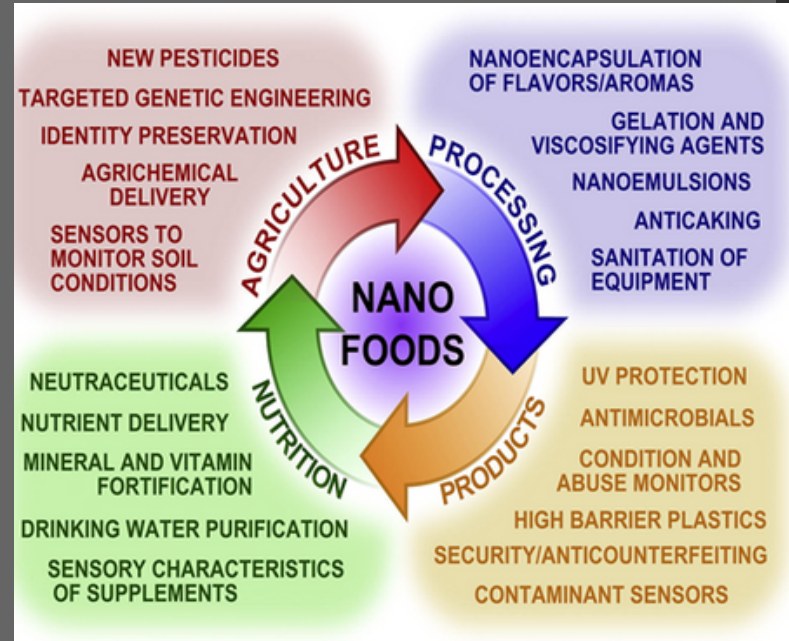
The nano coating market is seeing the most substantial growth at nearly 25% CAGR, with anti-fingerprint nano coating at the top of the list for several industries, including packaging.

From packaging material, product safety and authentication to tracking, nanotechnology has applications at various phases of the packaging supply chain. The use of nanoparticles mixed with polymer chains in packaging enhances barrier properties and tensile strength. It enables tracing and anti-counterfeiting for brands.

Nanotech also has a big impact on the food packaging industry by addressing the rising concern of food safety by keeping it safe from dirt, dust, and stains. Nanosensors are also useful in monitoring the freshness of the food and detect any chemical changes.

Canadian startup Arylla develops smartphone readable invisible ink to make products traceable. Its proprietary invisible ink uses nanotechnology and is completely undetectable by sight. Label suppliers use the ink to print unique identifiers or tags with Arylla's low-cost, small-footprint inkjet stations which offer personalised customer experiences, fight counterfeit, and improve traceability.

The ink can be printed on different materials including woven labels, packaging, hand tags, patches and luxury items to ensure authentication and prevent counterfeiting.



8. Cyber Security in Packaging Operations

With the rapid adoption of Industry 4.0 connections, the packaging industry is now at threat from hackers and other malicious entities with the rising use of IIoT in the sector. Companies are adopting strict measures while getting rid of compartmentalization in terms of operational technology and information technology.

Firewalls between systems, production and process plants are becoming a common sight. The role of analytics in operations such as warehouse management is also creating opportunities for cybersecurity offerings, to minimise chances of disruptions.

9. Smart Labels

This technology uses patented intelligent pigments and inks that will change colours depending on the temperatures of CO₂ levels in the product by detecting how fresh food is when the package is first opened.



Once the package is opened, the label can remind consumers how long the food has been in the fridge. The centre dot on the label will change colour from yellow to purple. Yellow indicates that the product is fresh while purple indicates that product is past best.

Changes in Manufacturing & Operations

When it comes to the future packaging, manufacturing and delivery will be centred on speed and the emerging ways in which products are delivered.

10. Smart Packaging- Internet of Packaging

Internet of things has had a transformative effect in a number of ways, including smart packaging which helps to cut down food waste in complex, global supply chains, as well as in a healthcare setting, enabling doctors to keep track of their patients through connected medical packaging.

Smart packaging leverages technology such as QR codes, smart labels, RFID & Near Field Communication (NFC) chips which offer value-added benefits of security, authentication, and connectivity, making the product packaging a data carrier and digital tool.

Indonesian startup Langgeng Sukses Abadi Technology offers an anti-counterfeit technology solution. The startup integrates QR codes and cloud technology to allow brand owners and customers to identify the authenticity of the products and track items throughout the supply chain.

This is done through the web-based portal and applications. QTRUST enables brands to interact with customers; deliver the correct brand story, and run customer survey campaigns. The startup's mobile app enables users to check the product information, location of shops, transaction history, and get reward points.



11. Digital Printing

The process of printing on packaging comes with many challenges, some of which are accuracy, low quality of colour, and high labour costs which led to the innovation of Digital Printing. Unlike traditional offset or flexo printing techniques, it does not require separate plates for different prints.

All the content is printed in a single pass in digital printing, making it less laborious. Modern digital printing has a limited impact on the environment as it eliminates the need for prepress procedures or additional labelling which, in turn, reduces waste and lowers inventory requirements. Additionally, with less turnaround time and more flexibility to experiment with the design, digital printing facilitates customised packaging for consumers.

Flexible Pack is a US-based startup that offers digital printing for flexible packaging. It uses a HP Indigo digital press for printing on flexible packages, pouches, shrink sleeves, and labels. The startup's technology offers gravure-matching quality along with a wide colour scale, increased productivity, and high-quality automated finishing which makes it easier to print variable data such as barcodes or QR codes.



12. 3D Packaging

A game-changer for its ability to provide a quick way to test products and packaging before they go into full-scale production, 3D printing plays a pivotal role in scaling packaging to new levels of customisation and creativity.

3D printing works by spreading molten plastic onto a base and gradually building up a design by layers. For this reason, it is also known as additive manufacturing.

For example, US company Smart Cups has come up with a range of 3D-printed cups which produce an energy drink when water is added as the ingredients of the drink are embedded in the packaging. 3D printing's great benefit is to improve manufacturing processes by enabling the rapid prototyping of machine parts.

For instance, additive technology can be deployed to produce robotic arms for use in the packaging process, achieving in days and weeks what previously may have taken months.



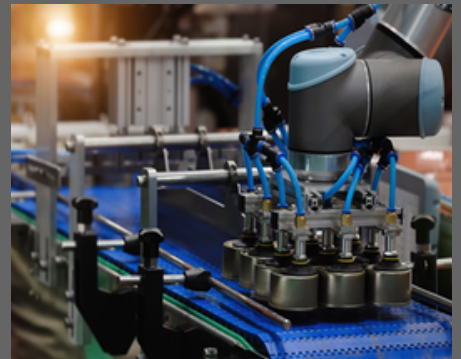
13. Packaging Automation

The major challenges associated with packaging are productivity, precision, and quality control. Automating the packaging processes for pick and place, depanning, filling, packing, sealing, labelling, and palletizing is a big packaging industry trend.

Packaging automation with the use of robotic arms and grippers not only eliminates human errors but also ensures the safe handling of delicate products.

Finally, startups are also developing AI based vision systems that take pictures of the finished goods on the floor to analyse the packaging that meets the set standards. These vision-assisted robots are used to automate processes such as product sorting, quality control, and inspection to increase overall efficiency.

A number of consumer product brands have taken to integrating AR technologies for their packaging formats. For instance, Pizza Hut launched a limited-edition AR carton allowing consumers to play games through the use of QR codes. Coca-Cola released beverage cups for use in White Castle outlets with brand awareness objectives through AR



14. Smart Warehousing

Future consumers will expect made-to-order products shipped quickly. As previously mentioned, cognitive computing, robotics, IoT connectivity, and other innovative technologies come together to form comprehensive fulfilment solutions to meet this demand via smart warehousing.

As robots begin to take on more tasks, artificial intelligence (AI) and machine learning (ML) have become more prominent in the world of machine automation. One company that is currently utilising smart warehousing is the e-commerce giant Alibaba. Their automated warehouse robot can carry up to 500 kg and coordinate package placements around the warehouse floor.



15. On Demand Warehousing

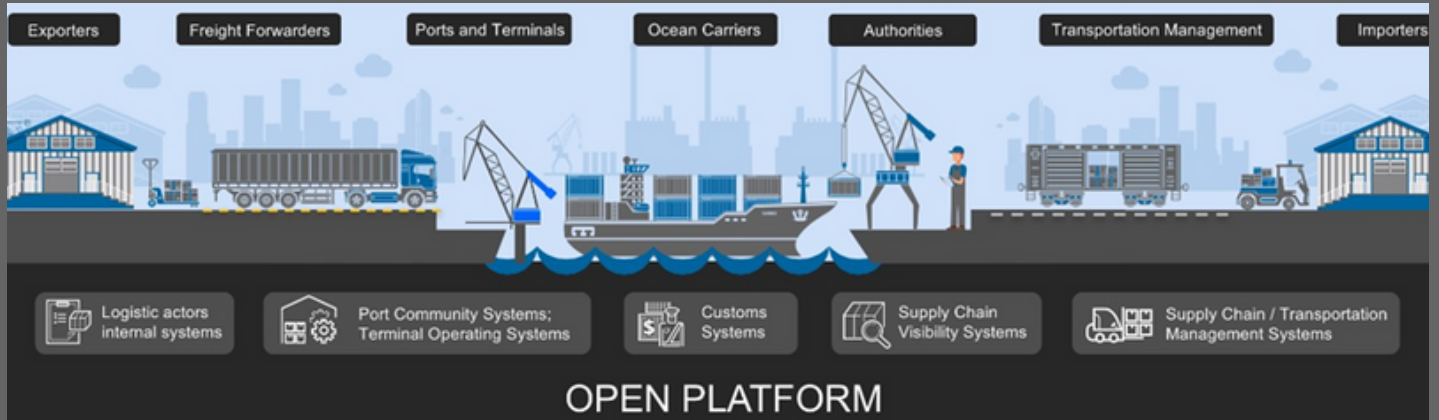
Another innovation that will likely take hold is on-demand warehousing. One example is Flexe, a company helping e-commerce merchants save on storage costs and provide next-day delivery virtually anywhere in the U.S by utilising unused warehouse space. Just like Airbnb, companies rent out warehouse space optimised by the latest tech which provides greater efficiency and the opportunity to expand without having to rely on the old model of acquiring and maintaining massive, inefficient facilities.

16. Use of Blockchain in shipping and logistics

By offering a decentralised digital ledger, blockchain is eliminating the need for intermediary shipping fees, paperwork, and other inefficient/vulnerable/wasteful practices which is streamlining the shipping processes while providing a level of tracking, security, transparency, counterfeit protection, and cost-effectiveness we've never seen before.

UPS, for instance, has already started to invest in smart logistics via blockchain technology. One startup the package-delivery giant has invested in is ShipChain, which is creating a decentralised transport & logistics platform set to revolutionize the entire shipping process.

The future is coming fast, and those who embrace blockchain now will be part of the logistics revolution. This offers an opportunity for effective collaboration and alleviates the complexity of not only the packaging industry, but any industry in question



17. Driverless Trucks

In 2016, self-driving startup Otto, which was acquired by Uber, successfully travelled 120 miles to deliver 2,000 cases of beer. This marked the first-ever commercial delivery via self-driving technology and grabbed the attention of companies worldwide with its safety, speed, and efficiency.

According to the World Economic Forum, the use of automated delivery will reduce accidents by as much as 70%, lower fuel consumption by 20%, and save up to 1.2 billion hours of transport time over the course of a decade.



18. Drone Delivery and Concerns

Leading the helm of last-mile solutions is drone delivery, but the tech isn't without its issues. Many are concerned with the complexity of door-to-door fulfillment, especially in crowded urban areas while others have speculated about the potential for theft, property damage, invasion of privacy via data collection, safety and the logistics nightmare involved with such vulnerable technology.



Changes in Ecommerce

19. Robotics

Robots are transforming the packaging industry, particularly in the field of ecommerce. The ability of robotic arms to sort small items into boxes for delivery quickly and accurately has made them a favorite with manufacturers and retailers. Mobile robotic platforms, which can navigate their way around warehouses have made huge improvements on efficiency.

The whole process of getting goods from factory to shelf is thus being speeded up, with precision and consistency, alongside developments in sensors and computer vision to help monitor the performance of the robotic packaging.

Online grocery retailer Ocado uses robots with human pickers as robots deliver pallets of goods to humans who pick out the specific customer orders. It is likely that the future of automated packaging lies in this type of “co-botics”, where robots work alongside humans to deliver a superior performance than could be achieved by either working alone.

This said, improving transportation logistics through data analytics and Big Data will also be of great importance. Implementing this new science in shipping logistics will allow for improved processes in regard to shipping times, distribution routes and the reduction of damage during transportation. This information will also yield more information for the development of eco-friendly packaging.

In summary, what the future holds for packaging is definitely being driven by the waste and inefficiencies of the past and present, focusing on customer satisfaction, with sustainably a key to future packaging. Companies and brands that can anticipate these future trends and adapt to as well as incorporate them into their packaging strategies will reap the benefits of being ahead of the curve.

SUSTAINABLE PACKAGING

Sustainability is gradually assuming importance in the packaging industry by consolidating with other strong patterns to drive significant changes in consumer product packaging.

Sustainable packaging is the development and use of packaging which results in improved sustainability. This involves increased use of life cycle inventory and life cycle assessment to help guide the use of packaging which reduces the environmental impact and ecological footprint.

Sustainable packaging has acquired a market with the presentation of green and eco-friendly packaging alternatives to metal jars, plastic containers, rigid cardboard boxes, and so forth. The commonwealth is aware of the fact that each of the above mentioned materials have high production costs and are not easily disposable. Plastic is perhaps known to be the most non-degradable substance utilised in the industry. To forestall the ecological issue and the rising worry about a worldwide temperature alteration, the modern packaging industry is continuously moving towards sustainable packaging.

Fast-Moving Consumer Goods (FMCG) companies are taking initiatives to work on both the sustainability of their products and to essentially reexamine their packaging frameworks. Many industries like personal care, food packaging, and beverage packaging have shown great interest in sustainable packaging materials as a result of increasing customer interests in a better and eco-friendly alternative.

NEED FOR SUSTAINABLE PACKAGING



Widespread usage of single use packaging has resulted in a very heavy burden on the environment, and the management of packaging waste is a facing crisis due to a major unresolved challenge:

- **Packaging recyclability and leakage:** Very large amounts of packaging produced today cannot be recycled in the existing recycling systems. This is especially true for multi-material packaging. Recycling rates for plastic packaging are relatively low. Global leakage or unmanaged dumps of all plastic materials is estimated to be around 19 percent, and only 16 percent of all plastic waste is re-processed to make new plastics. Public awareness of packaging waste leakage, especially plastic waste, into the environment has increased significantly. The visceral images of the effects of ocean plastics pollution have stirred up consumer sentiments around the world.

Hence, Environmentally friendly packaging solutions are no longer completely optional but absolutely necessary. In many cases, it is being demanded by government policies, consumer preferences, and corporate standards that businesses implement sustainable packaging practices to reduce their environmental impact. These environmental concerns are demanding the use of more eco-friendly packaging options.

MARKET OVERVIEW OF SUSTAINABLE PACKAGING



Sustainable packaging market is expected to register a CAGR of 10.3% over the forecast period from 2022-2030. Increasing awareness about environmental concerns among consumers and industries is primarily increasing the growth of sustainable packaging and processing operations. The elements that prompted the development of sustainable packaging are the introduction of biodegradable plastics which are lightweight, transmit lower carbon, and consume less natural assets. These bioplastics can be made utilizing inexhaustible assets in place of the non-biodegradable oil-based polymer which is hard to reuse and recycle because of the danger of contamination decrease in the greenhouse effect in view of less dependence on the use of fossil fuels to deliver biodegradable items, and use of methane gas as a source of renewable energy released during the ignition of regions loaded up with organic garden waste.

Moreover, the government around the world is also imposing rules and regulations to promote the use of sustainable packaging. Consequently, many big as well as small scale companies are shifting to sustainable packaging.

• Initiative by Nestle:

In January 2020, Nestle wanted to spend as much as 2 billion Swiss francs (USD 2.1 billion) on moving its packaging from virgin plastics to food-grade reused plastics and expanding the advancement of more manageable arrangements. The food giant said it will purchase up to 2 million metric tons of food-grade reused plastics and give more than USD 1.6 billion to pay a premium for these materials somewhere during the period of 2020 and 2025. The organization additionally will send off an economical packaging venture reserve with 250 million Swiss francs (USD 260 million) to put resources into new businesses dealing in these areas.

• Initiative by Coca-Cola:

In October 2019, Coca-Cola Western Europe and Coca-Cola European Partners (CCEP) moved forward their desires for a World Without Waste by speeding up their joint action intended to gather, recycle and reuse their packaging. The two partners are increasing current standards of This is Forward, their sustainability action plan for Western Europe, which swore that by 2025 Coca-Cola would gather a can or bottle for everybody to whom it sells; guarantee that each of its packagings are 100% recyclable and guarantee that basically half of the substance of its plastic containers comes from recycled material.

ASIA-PACIFIC MARKET SIZE OF SUSTAINABLE PACKAGING

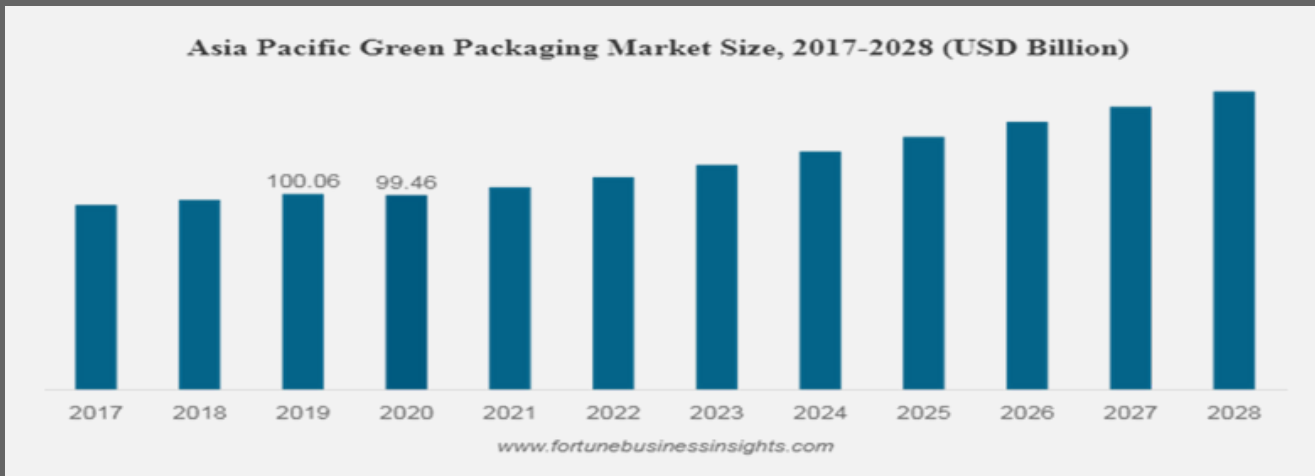
Asia pacific is expected to remain at the top holding the highest position in the global sustainable packaging market during the forecast period. The market size in asia pacific stood at USD 99.46 Billion in the year 2020. The developing spotlight on sustainable packaging solutions by producers in China, India, Japan and South Korea because of the rising environmental concern among customers is probably going to build the regional market share of the overall industry.

North America is expected to exhibit huge development in the market attributed to tough guidelines supporting green and sustainable packaging. For example, in 2017, the Environmental Protection Agency (EPA) coordinated a Sustainable Material Management program to adopt and implement SMM policies and practices.

Europe is one of the noticeable regions in the market. The expanding interest for sustainable packaging materials is driving the nearby market as it is relatively practical and eco-friendly. Moreover, the European-based companies such as Tetrapak, Mondi Plc, are shifting to bioplastics which will further lead to the expansion of the sustainable packaging market.

Latin America is relied upon to showcase extensive development during the forecast period. A rise in per capita utilization of food and refreshments in nations like Brazil, Argentina, and the Caribbean regions will lead to substantial market expansion.

The Middle East and Africa being in their developing phase are expected to showcase moderate growth. The expanding interest for canned items because of convenience and broadened time span of usability is flooding the interest for sustainable packaging. Also, the local brands that give different kinds of canned



TYPES OF SUSTAINABLE PACKAGING MATERIALS

Cornstarch packaging



Corn starch packaging is 30 percent stronger than existing polythene bags. Since they are biodegradable, cornstarch bags will have a huge demand from environmentally conscious consumers. It will further set up a niche market for new participants that could draw in customers.

Using cornstarch for packaging products may not be something you commonly consider doing. Nonetheless, this is a organic material that can be one of the most mind-blowing eco-friendly things to utilise.

Recycled Plastics



About 36% of all plastic created in a year goes into the packaging industry for packaging different kinds of products. However, plastic is accompanied by its own ecological burden and recycled plastic could be the response to the worldwide plastic waste issue. It's important to recycle plastics because this material can be used in so many alternative ways. One of the advantages of utilizing recycled plastic is that it is durable and can endure a ton of moving around an incredible arrangement.



Recycled Cardboard and Paper



With regards to packaging materials, anything produced using recyclable materials can be exceptionally useful and may diminish unreasonable trash. That is the reason recycled cardboard and paper are among the best eco-friendly sustainable materials accessible. Paper and cardboard is seen by many brands as the speedy success arrangement which will assist them with accomplishing their plastic decrease targets. For example, Marks and Spencer has replaced plastic produce bags with paper versions. And H&M has exchanged its in-store plastic bags for paper ones.

Corrugated bubble wrap



Ensuring safety of products is fundamental. This can be done in an eco-friendly way by utilising corrugated bubble wrap. Corrugated Bubble wrap is made from 100% recycled cardboard. Significantly more, it is recyclable and naturally biodegradable. It can be reused any number of times and can even make it very easy to keep our belongings well packed and ready to make any trip.

Mushroom Packaging



Mushroom Packaging comprises 100% biodegradable and sustainable material that can be reused directly by nature. It tends to be produced using non-poisonous materials and is an optimal strategy for attempting to have a superior climate. Using mushrooms' inherent growth power, packaging can be manufactured with minimal energy use.

Biodegradable Packing peanuts



The environmentally-friendly alternative to polystyrene packing peanuts is biodegradable peanuts, by and large made from starch, one of the most bountiful natural polymers on Earth. When used in bulk, biodegradable packing peanuts provide a cushion effect and can move and tumble to fill air holes. This ensures the safety of items with many edges that can easily get damaged.



BENEFITS AND LIMITATIONS

BENEFITS

Eco-friendly packaging is the present state and the foreseeable future in the packaging industry. There are many benefits that come along with switching to eco-friendly packaging:

Reduces carbon footprints:

Carbon footprints for your business can be defined as the amount of CO₂ and other carbon compounds emitted due to the consumption of fossil fuels in your organisation. Eco-friendly packaging is made of recycled waste material which reduces the consumption of resources and hence reduces the carbon footprints.

Easy disposal:

If the packaging is compostable or recyclable, it can be converted into compost or can easily be thrown into the recycling bin for re-use.

Free of allergens and toxins:

Most of the eco-friendly biodegradable packaging options are non-toxic and allergy-free. It is important to keep a check on what material is being used for packaging and the harm it can potentially have on people's health and well being. Eg. Sugarcane pulp packaging is a safe and healthy packaging option.

Improves your brand image:

Eco-friendly packaging on your products creates a good impression of your company. It shows that you care about the environment. It is a great way to impress your customers and also do your part in saving the environment. According to a study, 78% of customers between the age of 18 and 72 feel more positive about a product or manufacturer whose packaging is sustainable.



LIMITATIONS

Sustainable packaging comes with its own fair share of disadvantages. Some of them are:

Cost factor:

The cost of switching can be expensive for many small businesses. The switch to using green materials can lead to higher overall costs in your production process.

Green packaging can be cost effective in the long run, but it's difficult to anticipate at what point that'll happen.

Requires cultivation of crop:

Corn starch packaging, better known as PLA, comes from corn. Corn in itself is a renewable and cost effective crop. However, the use of it in packaging is criticised by many who feel that it can serve a better purpose to help alleviate hunger.

Cross-contamination:

The materials in use can effectively be broken down only if disposed of correctly. There's a very high risk of cross-contamination when these products end up in recycling facilities. The cross contamination can also impact the recyclability of other products and result in even more wastage.

Cannot completely replace the non-biodegradable products:

There are many applications where non-biodegradable substances like plastic are more suitable for moulding/designing purposes.

Lesser shelf life:

Eco-friendly products have lesser shelf life than the non-biodegradable products. The shelf life of plastic is said to be eternity.

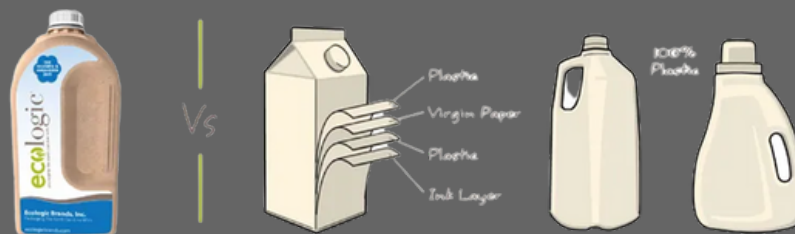
FUTURE OF SUSTAINABLE PACKAGING

The packaging industry is moving ahead on a number of fronts to improve the green credentials of many types of business.

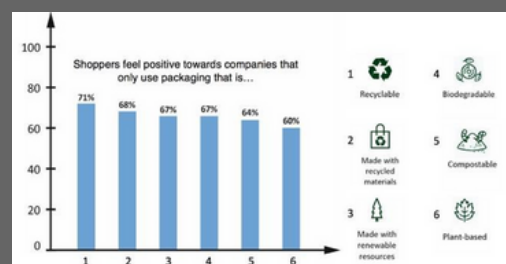
It is predicted that the Global Sustainable Packaging market will reach \$244 billion by 2023. This market increase will be led by the Asian markets and the recyclable paper packaging segments. A great example of a company leading the way in sustainable, paperboard packaging is ECOLOGIC. These are some of the photos to depict how their packaging works.



The outer shell can be recycled up to 7 more times and it is compostable. The inner pouch uses 70% less plastic than plastic jugs.



Sustainable packaging will evolve in the 21st century. It is a matter of time before the costs of producing sustainable packaging are lower or equal to current solutions. The real question is if millennials would actually value sustainable packaging like so much of the qualitative research suggests. Many popular fashion brands like H&M, Zara and many more are also shifting to sustainable packaging. Overall, sustainable packaging is good for the world and has a great future ahead.



SUSTAINABLE PACKAGING IN DIFFERENT INDUSTRIES

- **Food and Beverage Industry**

It's no secret that packaging goes hand in hand with consumption. And when it comes to foods, packaging serves crucial functions. The most common food packaging materials are plastic, glass, aluminium, steel, paper, biodegradables, wood and composites.

Researchers estimate that in more economically developed nations, food packaging accounts for over 66% of total packaging in circulation. Hailing from Berlin, Arekapak is a sustainable start-up which developed an exciting line of natural packaging solutions made from sun-dried areca palm leaves. Arekapak's 100% natural snack boxes are not only ideal as a POS presentation of fresh fruits and vegetables but can also be used by consumers as plates for picnics. The material is 100% biodegradable and free from chemicals. Arekapak's production requires little water or energy and supports local communities. The packaging is stable, resistant to heat and cold and has a natural, water-repellent surface making it an aesthetic, versatile and sustainable alternative to conventional packaging.

But this doesn't come without challenges.

For major food and beverage companies, the higher cost of sustainable materials and the struggle to keep food fresh are barriers. Production costs for sustainable options are 25% more compared to traditional packaging. These materials also tend to be less effective in maintaining freshness, packaging companies say plastic can have a tighter seal and keep out air better than other materials.



• Beauty and Personal Care Industry

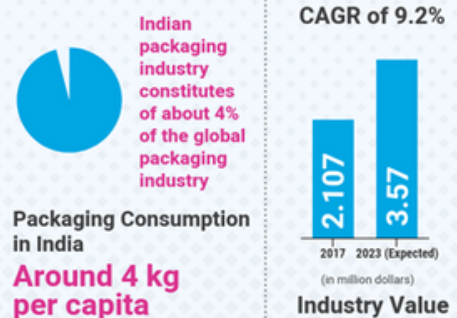
The reputation of utilising exploitative and ecologically imprudent business approaches is one that the beauty industry has a hard time getting away from. The developing consciousness of eco-sway and the customer's longing to avoid brands that aren't proactive in dealing with the sustainability of our planet has moved numerous businesses to forcefully seek after more ecologically mindful items. Numerous entrepreneurs are contributing more to diminish adverse consequences on the climate via greener details and sustainable packaging. Packaging has the highest environmental footprint of cosmetic products, so it makes sense to keep sustainable packaging as the priority in taking steps to reduce the carbon footprint.



• Medical Industry

The medical field is another industry, like food and beverage, which requires a high level of sophistication in packaging. While food and beverages need to be preserved and well-protected for healthy consumption, medical items have very specific requirements when it comes to sterilisation, aseptic processing and uncompromised barriers. From medical devices to pharmaceuticals, vitro diagnostics and biotechnology, medical product packaging has to be in compliance with the general health and safety requirements by the U.S. FDA Code of Regulations. Sustainability is less of a priority in medical packaging, but is still something being pursued.

India Pharmaceutical Packaging State of the industry



10 Major Players

Ancor Ltd	Rexam Plc
Time Technoplast	Aptargroup Inc
Bilcare Ltd	CCL Industries Inc
Essel Propack Ltd	Gerresheimer AG
Ess Dee Aluminium Ltd	West Pharmaceutical Services Inc

Source: Mordor Intelligence Report
www.smefutures.com



- **Fashion Industry**

The fashion industry has not exactly been known for valiant efforts toward sustainability. Textile dyes release harmful metals and chemicals into our aquatic system during manufacturing, attributing 20 percent of the global industrial water pollution, according to The World Bank. On top of that, the 'throw away culture' of the developed world is only contributing to the mass of clothing in landfills. Sustainable packaging is one change that the fashion industry can make to improve environmental efforts, and many have. With the increase of online shopping, the need for protective packaging has increased exponentially over the past decade. This protective package is usually discarded when it arrives at its final destination. Every 30-40 days the average person discards their body weight in packaging. These boxes, bags and wrappers total 30 percent of our garbage by volume and 50 percent by weight. Fashion e-tailers that have switched to 100% recyclable poly mailers from their rigid counterparts have decreased DIM weight and lowered shipping costs. They have saved money with sustainable packaging!

Some industries are well versed in sustainable packaging and some are just now trying it out to see if it can really work for their specific set of needs. The truth of the matter is, in many cases, it's not as difficult or costly as it seems, and the benefits far outweigh the inconvenience of making a change.



GROWTH PROSPECTS OF THE PACKAGING INDUSTRY

When contemplating the future of packaging, it's always a good idea to look at where it was yesterday and where it is now, taking into account all of the positives and development potential.

According to the company's thorough report *The Future of Global Packaging to 2024*, the market will grow at a 2.8 percent CAGR from 2019 to 2024, reaching US\$1.05 trillion in 2024.

The Indian Packaging Market was valued at \$50.5 billion in 2019, and is predicted to reach \$204.81 billion by 2026, with a CAGR of 26.7 percent from 2021 to 2026. Packaging is one of India's fastest growing businesses, growing at a rate of 22-25 percent per year, and the country is quickly becoming a preferred hub for the packaging industry.



If statistics are to be believed, India's per capita packaging usage is fairly low, at 8.7 kilograms, compared to 42 kg and 19 kg in Germany and Taiwan, respectively. As a result, the industry is likely to have a lot of room to expand. The business, which is currently India's fifth largest industry, has seen consistent growth in recent years and has a lot of room for expansion, especially in the export market. Almost all user sectors with significant growth potential, such as processed foods, hard and soft drinks, fruit, and marine products, have a lot of opportunities.

UFlex Limited, EPL Limited, Huhtamaki India Ltd., Mould-Tek Packaging Ltd., Kanpur Plastipack Limited, and others are among the industry's top players.

Five emerging packaging trends of the future

- **E-commerce**

With the regular rise of e-commerce — headed by Amazon, the king of e-commerce — and further fueled by COVID-19, which curtailed consumers' ability to visit brick and mortar establishments, e-commerce is exploding and setting the stage for customers to shop online. To drive their products, e-commerce companies are focusing on consumer branding and studying consumer behaviour. Amazon and other large e-commerce companies will continue to focus on decreasing waste, removing packaging where possible, and providing customers with a sustainable, environmentally friendly package. Additionally, packaging will need to continue to provide customers with an unboxing experience through protection, safety, waste reduction, and an emphasis on brand awareness.

- **Sustainability**

Sustainability is the most prevalent trend in packaging today. Not only will this trend continue as consumers demonstrate a willingness to spend more for an environmentally friendly package, but firms like Amazon are establishing sustainability requirements and imposing fines if they are not met. Packaging suppliers will eliminate waste, utilize more recycled materials, and focus on packaging that decreases the carbon footprint and energy required to create and ship their products in the future, demonstrating their environmental commitment. Packaging vendors will deliver edible or dissolvable packaging manufactured from natural starches and vegetable and algae-based polymers.

- **Design Concepts**

Cost-effective, waste-conscious, and functional packaging requires innovative design solutions. Different shapes and sizes will be used in the future of packaging to take advantage of packing efficiencies for space, storage, and serving portion sizes. Product authenticity will be protected by RFID labels and smart tags, which are all part of the new design principles. The use of squares and corners on packaging will be the norm, as will space-saving packaging. Printed electronics will be used in the new design to demonstrate utilization, brand identity, and "pop," as well as track consumer usage.

- **Personalization**

Personalization will have a role in packaging in the future. You will be able to personalise your products and potentially even have your name printed on them, similar to how recent Coke bottles have had names printed on them. Future personalization will inspire customers to buy more of a brand because it focuses on the consumer and what they desire.

- **Manufacturing and delivery**

Manufacturing and delivery of future packaging will be oriented on speed and the evolving ways in which things are delivered. Smart warehouses, which exploit idle warehouse space and are closer to the consumer, will be able to deliver items to your home faster as driverless cars and drones become more popular in the future. The adoption of autonomous vehicles and drones will be driven by safety, efficiency, reduced accidents, lower fuel consumption, and shorter transit times. Manufacturers will also make more use of 3D printing, resulting in packaging that is both appealing and representative of brand recognition. Robotics in warehouses and distribution centers will also speed up delivery, as customers will expect their made-to-order items to come quickly.

What lies ahead?

Due to fast change across the business, the industry, which employs around 5 million people directly and three times as many indirectly, will continue to grow.

Driving Forces:

- The packaging business will continue to benefit from the organized retail and e-commerce booms, which offer enormous possibilities for future retail growth. The industry will benefit from the rising presence of global multinational corporations, consumer brand awareness, and products with "clean-label" branding.
- Food safety and packaging regulations are becoming more stringent, which is expected to encourage the adoption of high-quality packaging.

- Affordability, smaller metropolitan household sizes, and time compression are also predicted to favor packaged foods. In addition, the government's goal of making India a global manufacturing hub will help the packaging business flourish.
- With established firms choosing to package products, the industry is growing at a rapid pace, and demand from new entrepreneurs, as well as small and medium businesses, will contribute to the industry's comprehensive growth.

Given the rapid growth of the Indian packaging industry, the country's leading packaging companies, such as Essel Propack and Uflex, are preparing innovative packaging concepts, as well as a variety of value-added packaging materials and sophisticated products for the market. Essel Propack and Uflex are two companies in the business where investors can make long-term investments.

Awaiting the Future

According to the Indian Institute of Packaging (IIP), packaging consumption in India has surged by 200 percent in the last decade, from 4.3 kilograms to 8.6 kilograms per person per year. In conclusion, the waste and inefficiencies of the past and present are driving the future of packaging, with a focus on customer pleasure and sustainability. Future leaders will be those who innovate packaging and customer experience while still saving the environment!

STRATEGY AND RECOMMENDATIONS

It doesn't have to be tough to find sustainable packaging alternatives. Let's talk about some proposals and strategies for making packaging more sustainable. Here are a few simple ways to improve your sustainable packaging while also helping to create a healthier, safer environment:

- **Switch to corrugated:** Change to corrugated corrugated corrugated corrugated corrugated corrug Corrugated paper goods, also known as cardboard, are the most recycled materials on the globe. Cardboard boxes and containers are easy to recycle and are widely used for storing and transporting various things by both businesses and consumers.
- **Use high recycled content plastics:** Plastics with a high recycled content should be used. Recycled PET (RPET) is a type of plastic created from recycled water bottles, which eliminates the need for new plastic to clutter landfills and oceans.
- **Choose less bulky cushioning material:** Choose a cushioning material that isn't as bulky. Corrugated cases can be made smaller and lighter by employing more efficient materials to protect products from harm during shipping, such as less bulky padding. This reduces the amount of fuel and energy used as well as the expense of doing so.
- **Replace clamshells with the H-Loc Trapped Blister:** Clamshells can be replaced with the H-Loc Trapped Blister. While clamshells are made entirely of plastic, which is harmful to both the environment and customers, the trapped blister is made largely of recycled corrugate and RPET.

- Automate packaging operations: Packaging operations should be automated. Manual packaging has a tendency to waste materials. Automating the packing process saves time and money by reducing material usage.
- Use padded mailing bags: Padded mailing bags should be used. To save even more raw materials, small items can be packaged in cushioned mailing bags instead of cardboard boxes.
- Use moulded fibre wine shippers: Use wine shippers made of moulded fibres. Replace wood or corrugated wine carriers with moulded fibre to reduce material use, fuel consumption, and prices.
- Switch to recyclable loose fill peanuts: Make the switch to loose fill peanuts that can be recycled. Polystyrene peanuts, often known as Styrofoam peanuts, are extensively used for cushioning and filling in products constructed with plastics similar to Styrofoam. After disposal, these materials are difficult to decompose.
- Conduct a comprehensive packaging sustainability audit: Conduct a thorough examination of your packaging's long-term viability. Understanding the life cycle of the products and materials you use in your packaging might help you enhance the process. Perform an audit to get to the bottom of the problem and assess a package's genuine performance.

Conduct a high level packaging design review: Conduct a high-level review of the packaging design. Examine defects, benefits, economic aspects, efficiency, and more to improve packaging design.

CASE STUDY

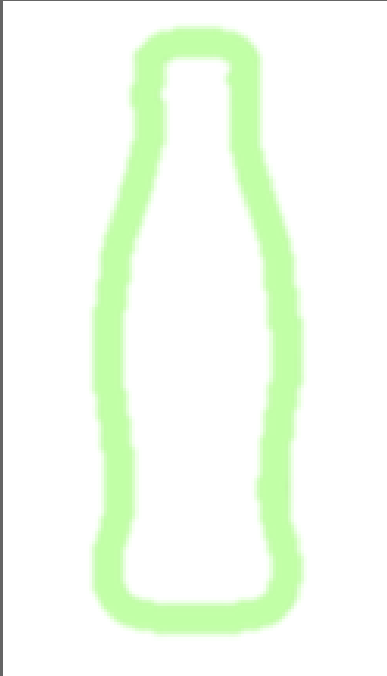
COCA COLA

EVOLUTION OF PACKAGING IN THE COCA-COLA COMPANY

- 1894 - Common glass bottle called a Hutchinson
- 1916 - Birth of the Contour Bottle
- 1923 - Six pack Carriers
- 1928 - Bottle overtakes fountain
- 1955 - Different sized bottles
- 1978 - Recyclable PET bottles
- 2000 - Ultra-glass Lightweight Contour Bottle
- 2005 - Aluminium bottles
- 2009 - Green Plant bottles made with sugar cane extracts.
- 2013/14 - Your name on the bottles



THE UNIQUE CONTOUR SHAPE



The Coca-Cola Company asked the Root Glass Company in Terre Haute, Indiana, to design a package that was "so different that it could be recognised by touch alone and so unusual that it could be identified when shattered on the ground" to avoid confusion with other brands attempting to replicate Coke. The outcome was the distinctive Coca-Cola bottle, which was inspired by the curves and grooves of the gourd-shaped cocoa bean, which was originally assumed to be an ingredient in the product by the designers.

THE COKE RED COLOUR

When you see it, you know it! "In a way, it became a promise.

" When you see a red disc icon on a storefront, you know you'll be able to purchase delicious, ice-cold Coca-Cola there. The colour red's enduring "promise" continues to drive Coca-Cola's approach to design, to the point where the business considers it its "second secret recipe."

The "One-Brand" concept integrates Coca-Cola, Coca-Cola Light/Diet Coca-Cola, Coca-Cola Zero, and Coca-Cola Life under a single look-and-feel and creative campaign by visually applying the famous red disc over the Coca-Cola brand. This design approach uses the colour red to remind consumers that regardless of the beverage they buy, they are "purchasing into Coca-Cola as a simple notion."

PERSONALISED PACKAGING



The 'Share a Coke' Campaign

The 'Share a Coke' campaign involved changing the traditional wrapping around the Coca-Cola bottle to say 'Share a Coke with...' and a popular name. The campaign's goal was to build a more intimate relationship with customers and generate shared happy experiences. The 'Share a Coke and a Song' campaign, which featured popular song lyrics printed on Coke bottles, debuted in 2016 as a fresh variation of the promotion. The campaign elicited a strong emotional response from the entire country.

WORLD WITHOUT WASTE INITIATIVE

DESIGN - Make 100% of the packaging recyclable globally by 2025—and use at least 50% recycled material in the packaging by 2030.

COLLECT- Collect and recycle a bottle or can for each one the company sells by 2030

PARTNER- Bring people together to support a healthy, debris-free environment.

SUSTAINABLE PACKAGING STRATEGIES

RECOVER AND RECYCLE

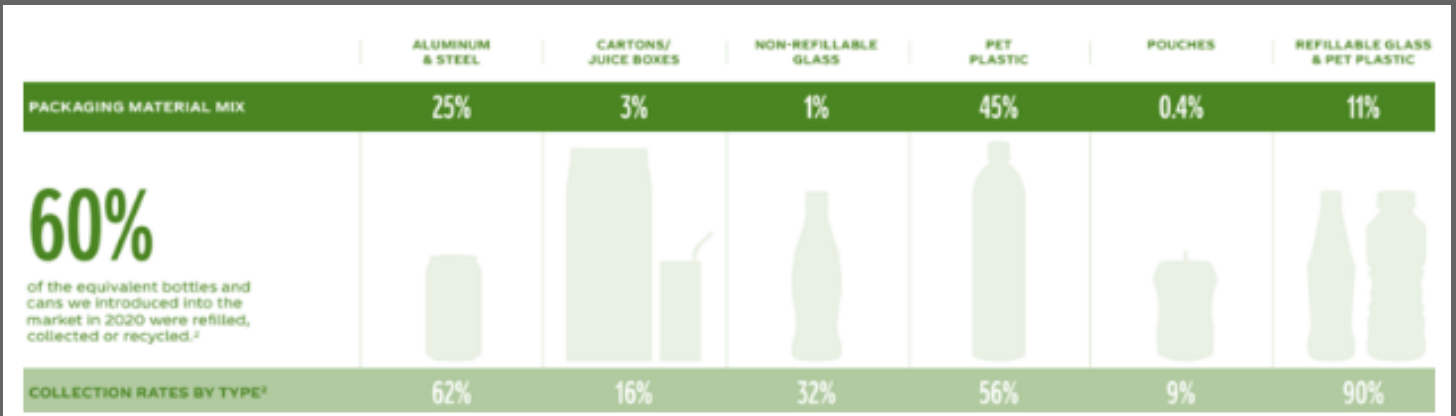
Coca-Cola offers a variety of beverages in India, including returnable glass bottles (RGBs), aluminium cans, pet bottles, and tetra packs. Nearly half of all beverage sales are made in RGBs, which are fully recovered from the market except for breakages.



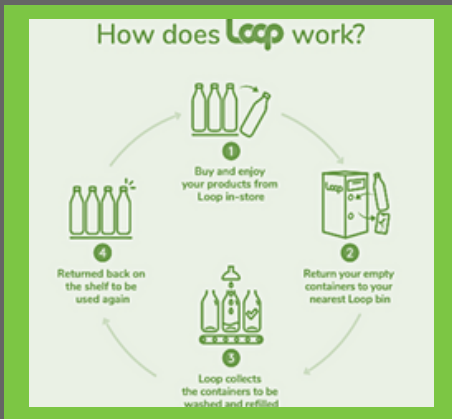
LIGHTWEIGHTING

Sustainable packaging requires the Company to “reduce, reuse and recycle.” One way the company reduces is by improving the design of the packages, a process known as lightweighting. Coca-Cola has successfully used technical advances to lower the weight of the packaging of various of its products throughout the years.

RETURNABLE AND REFILLABLE PACKAGING



COVID-19 prompted the Coca Cola Company to accelerate their focus on refillable packaging in response to consumer affordability concerns and its potential to help the company meet their sustainability goals. According to research conducted with Ipsos, the pandemic has made consumers more aware of packaging waste and driven preference for refillable packages. To combat these trends, Coca Cola's global customer and commercial team unveiled a comprehensive refillables strategy. Returnable and refillable packaging aided their World Without Waste collection targets and proved to be the most environmentally friendly packaging alternative.



Loop allows customers to buy and enjoy a range of items in customised, brand-specific packaging that is collected, cleaned, refilled, and reused or recycled sustainably. In a closed loop shopping channel, the refillable/returnable model substitutes one-way packaging with durable, high-quality, refillable packaging. Consumers buy online for waste-free consumer packaged goods brands, which are delivered to their homes in custom-designed shipping totes. Once finished, consumers return empty items to their totes, which Loop collects and cleans so that the bottles can be reused safely. Loop replenishes products and returns refilled shipping totes to the consumer.

PACKAGING INNOVATIONS



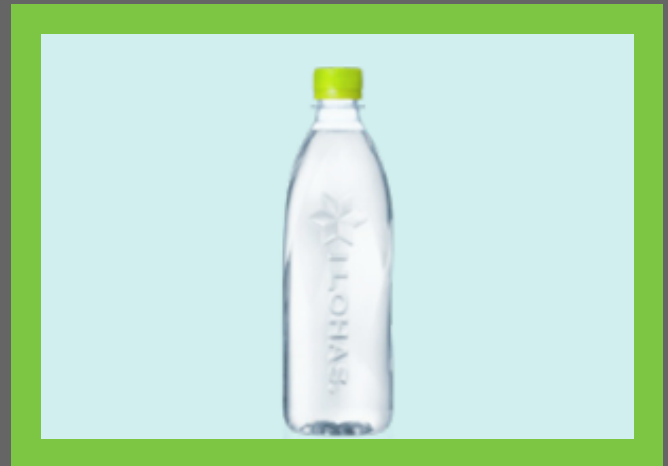
To solve COVID-19 safety concerns, a contactless solution for Coca-Cola Freestyle fountain dispensers was developed. The web-based solution, which is now installed on 10,000 machines, allows smartphone users to scan a QR code to pick and pour beverages without touching the dispenser screen or installing an app.





Developing a recyclable paper bottle prototype. The prototype consists of a paper shell with a thin recyclable plastic lining and cap. The technology is designed to create recyclable bottles made of sustainably sourced wood with a bio-based material suitable for beverages, beauty products and other liquid goods.

To make material sorting and recycling easier, a label-free 100 percent rPET bottle has been introduced. Consumers are currently required to remove labels from bottles before recycling. This twistable PET packaging innovation makes recycling very easy.



SUSTAINABILITY IN SECONDARY PACKAGING



Coca-Cola began the rollout of KeelClip technology as the first step in its commitment to replace low value plastic wrap on all can multipacks,



Coca-Cola announced CanCollar, a paperboard-based multipack can packaging solution, to eliminate any unneeded or difficult-to-recycle plastic.



CONVERTED PET BOTTLES INTO PROTECTIVE MASKS



The company found creative ways to keep recyclers safe during the pandemic. The company converted 100% of PET bottles collected into 80,000 protective face masks. In Mexico, it used 1 million PET bottles to produce 200,000 protective masks.

THE MARINE PLASTIC BOTTLE



Coca-Cola introduced the world's first sample bottle made from recovered and recycled marine plastics, suggesting that even ocean debris could one day be utilised in food and beverage containers. This is the first plastic bottle manufactured from marine litter to be successfully recycled and reused in food and beverage packaging. The marine plastic bottle was created to demonstrate the transformative power of innovative 'enhanced recycling' technology, which can recycle previously used plastics of any quality back to the high-quality required for food and beverage packaging.

CASE STUDY AMAZON



FRUSTRATION-FREE PACKAGING

Frustration-Free Packaging

36%

Reduction

Outbound packaging by weight

1 Million

Tons

Packaging material eliminated

2 Million

Products

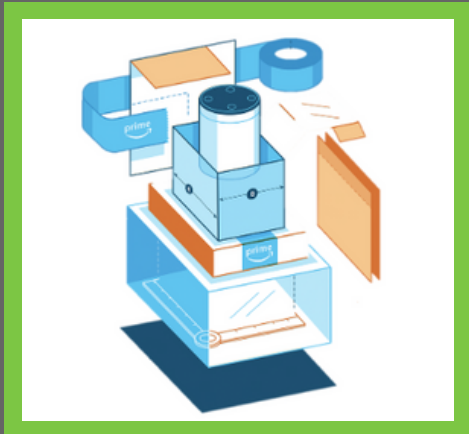
Qualify under our FFP Programs

Less Packaging, More Smiles

Frustration-Free Packaging (FFP) was introduced by Amazon to assist manufacturers in reducing packaging waste and developing sustainable solutions for online fulfilment. These FFP programmes encouraged manufacturers to package their items in easy-to-open, 100% recyclable packaging that was ready to ship to customers without the use of additional Amazon boxes. Since 2015, the company has decreased the weight of outbound packing by over 36% and eliminated over 1 million tonnes of packaging material—equivalent to 2 billion shipping boxes.



SUSTAINABLE PACKAGING STRATEGIES



•Eliminating Thin Film Plastics

Amazon replaced plastic materials like bubble wrap and air pillows with paper cushions and introduced plastic-free, biodegradable tape, eliminating single-use, thin film plastics in packaging.

•Increasing Recycled Content

Amazon is improving the composition of their plastic packaging solutions to use less material and incorporate more recycled content. It increased the recycled content of plastic film bags from 25% to 50% in 2021, and from 15% to over 40% for plastic padded bags. Together, these improvements are expected to eliminate more than 25,000 metric tons of new plastic each year.

RECYCLABLE PAPER PADDED MAILER



Amazon's innovative paper padded mailer offers the same recyclability as their corrugated boxes, while taking up less space in transit and in the recycling bin. The paper padded mailer is made of four layers of paper and a water-based cushioning material, which was designed to easily separate in the same way that print inks and other paper coatings are removed during the paper recycling process.



Lightweight cushioning inside Amazon's new recyclable mailer



The corner of Amazon's new recyclable mailer directs customers to resources with more information about recycling

GROCERY FRIENDLY PACKAGING

Recyclable Grocery Solutions

Amazon is rolling out a curbside recyclable solution to keep grocery items frozen or chilled during delivery. This new packaging is produced with recycled paper and eliminates the need for plastic liners or bubble bag insulation.



SUSTAINABLE DEVICE PACKAGING



Amazon is incorporating recycled plastics, fabrics, and metals into many new Amazon devices. In 2021, the company launched a number of new Echo, Fire TV, Fire Tablet, Kindle, and Smart Home devices and accessories that include 10-60% post-consumer recycled plastic, 40-100% post-consumer recycled fabric, 80-100% recycled aluminium, and 70% recycled magnesium, depending on the product. Amazon also incorporated 50% post-consumer recycled plastic into certain power adapters that ship with their devices.

**Reducing Device
Packaging Waste**

29 Million

Plastic Bags Eliminated

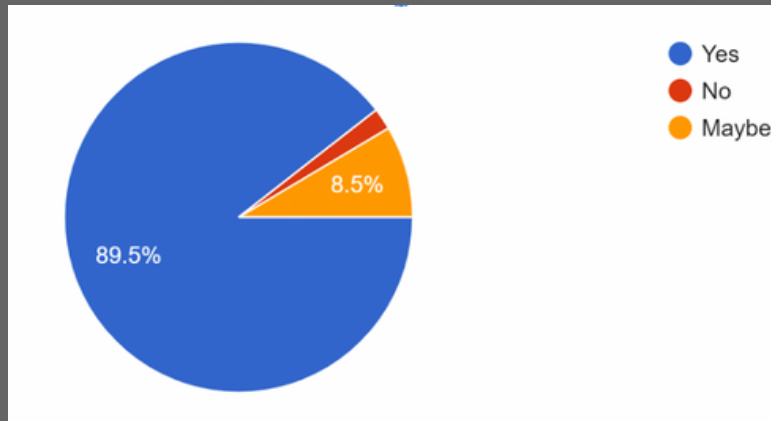


AMAZON'S MACHINE LEARNING STRATEGY

Minimizing the space occupied by removing additional packaging. What size box is required for a particular product? Is an Amazon package really necessary? Amazon employs machine learning algorithms to arrive at the best potential packaging choices for deliveries at its scale in order to optimize packaging selections. This requires determining which products do not require additional packing and which smaller products are suitable for flexible packaging, such as padded mailers and bags, which are up to 75% lighter than comparable-sized boxes. Flexible packaging fits to the shape of the product, decreasing the need for additional packing materials and taking up 40% less room during transportation than a box. Machine learning assists them in constantly optimising box selections to meet Amazon's ever-changing catalogue of products and redesigning boxes to utilise less material in circumstances where the protection of a box is required. When packing is lighter and the correct size to protect customer purchases, the company may put more items into each delivery, resulting in fewer trips and reduced fuel. Amazon also uses machine learning to identify products for which even minor packaging changes can have a large impact on trash reduction. The company built a machine learning algorithm, for example, to identify liquid products with the highest average rates of customer-reported damages. Amazon puts such items through rigorous testing at its Amazon Packaging Lab, which replicates a package's journey from manufacturer to customer and provides data and insights that the business may share with manufacturers to help them improve packaging design.

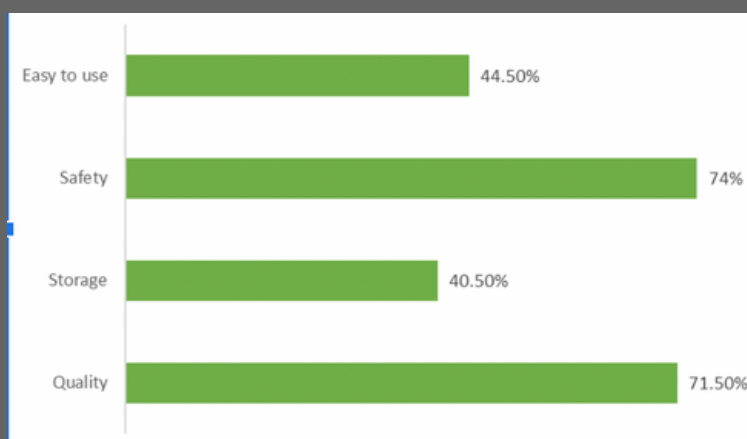
FINDINGS

Do you believe that better packing results in better protection?



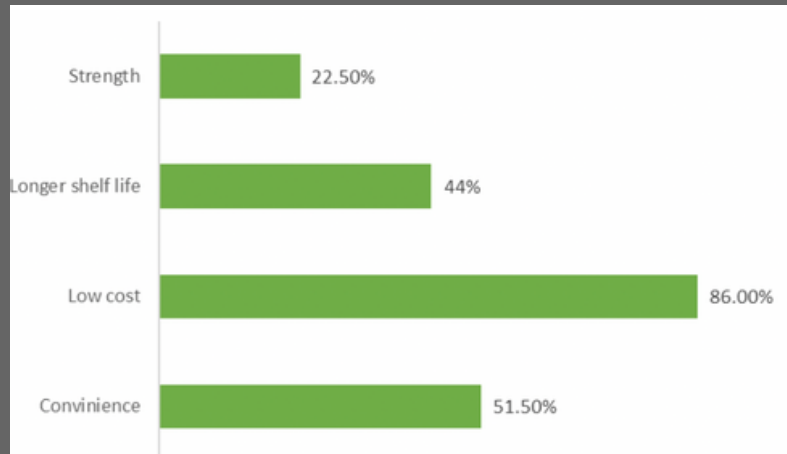
Out of the people surveyed, 89.5% believe that better packaging results in better protection of the product. Packaging does in fact keep the product safe along the supply chain, from the manufacturer to the final consumer. It shields the goods from moisture, light, heat, and other elements. Protection is said and believed to be the most important function of packaging.

Which of the following features do you look for in a product's packaging?



While protection is the most important function of packaging as can be seen with 74% of the surveyed people, that feature is not what all users want in their packaging. People also look into the quality (71.5%) of packaging as well as the ease in use (44.5%) of packaging and the storage capability of packaging (40.5%).

Why do you think plastic is widely used in the packaging industry?



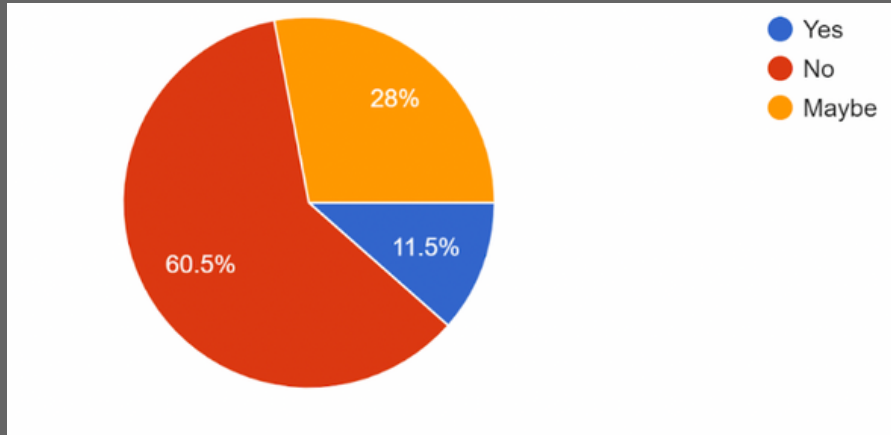
Plastic packaging is the most well known packaging. It might be in the form of packing peanuts to large containers. 86% of the surveyed believe that plastic is widely used because of its low cost. But plastic is widely used because of various other factors as well such as convenience (51.5%), longer shelf life (43.5%) and its strength (22.5%).

Which of the following plastic alternatives have you heard of?



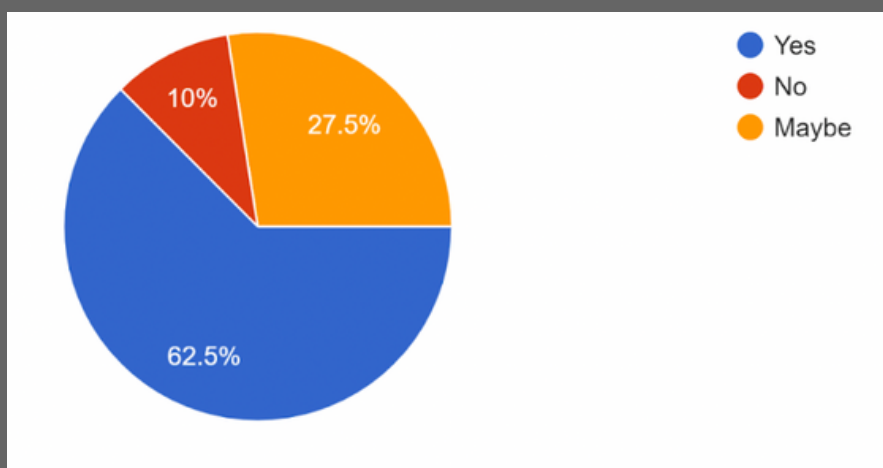
With the current times plastic packaging is not the most desirable packaging because of its disadvantages. A change has to be made to shift from plastic to a much more environmentally friendly packaging. That can be done only when we are aware of the alternatives. 62% of the surveyed respondents know about dissolvable packaging while 24% are aware about 3d packaging 25.5% about nanotechnology and only 14% self chilling can. All of these are great alternatives and can be made popular so as to decrease the use of plastic.

Do you think enough action is being taken to make a transition from dependence on plastic packaging to alternate sources?



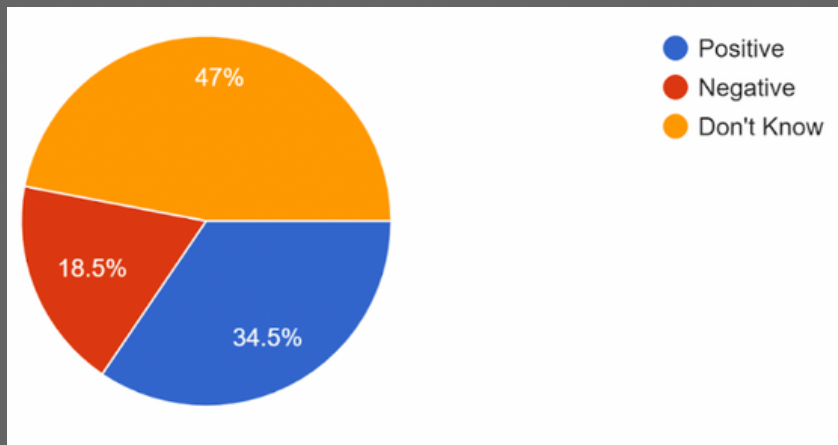
60.5% of the respondents believe that not enough action is being taken for us to shift from plastic packaging to its alternative sources while 11.5% believe that enough action is being taken .

Do you think excessive packaging is a hindrance?



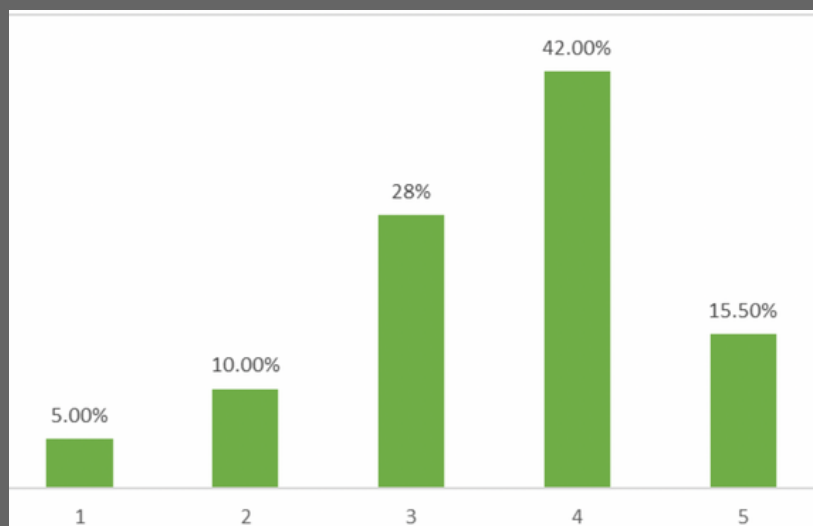
While opening up the many layers of packaging 62.5% respondents are of the opinion that the excessive layers of packaging is a hindrance for them.10% do not find the excessive packaging as a hindrance .

Do you think Covid-19 has left a positive or negative impact on the packaging industry?



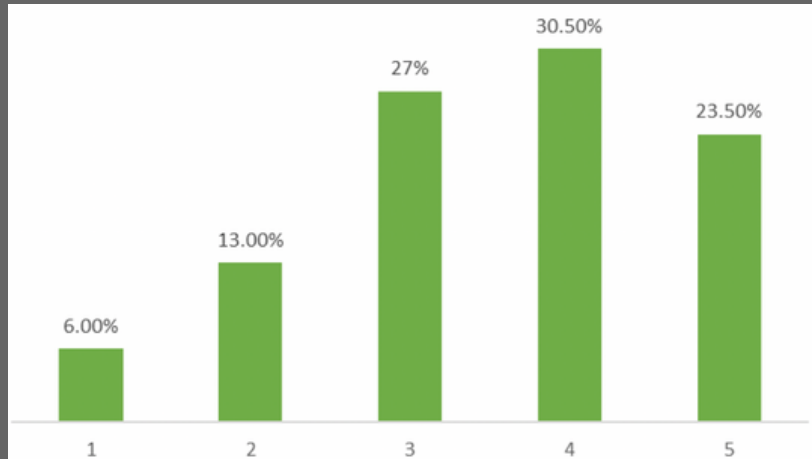
Covid has left an impact on all industries whether the impact was positive or negative is a different matter. There was a positive impact on the packaging industry according to 34.5% of the respondents while 18.5% believe that there was a negative impact.

On a scale of 1-5, how likely are you to purchase a product based on the attractiveness of its packaging?



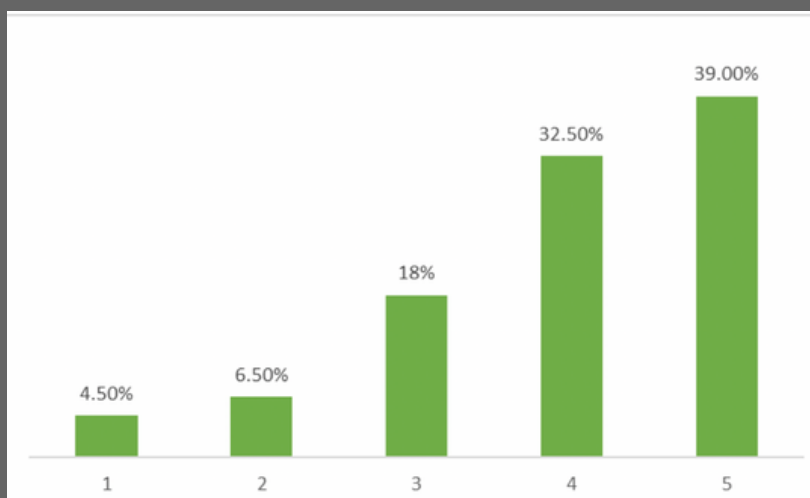
Many people do look into the attractiveness of a packaging despite what all of us have been told about not judging a book by its cover. Many agree that they are more likely to buy a product with attractive packaging.

On a scale of 1-5, how likely are you to purchase a product based on the fact that its packaging is sustainable?



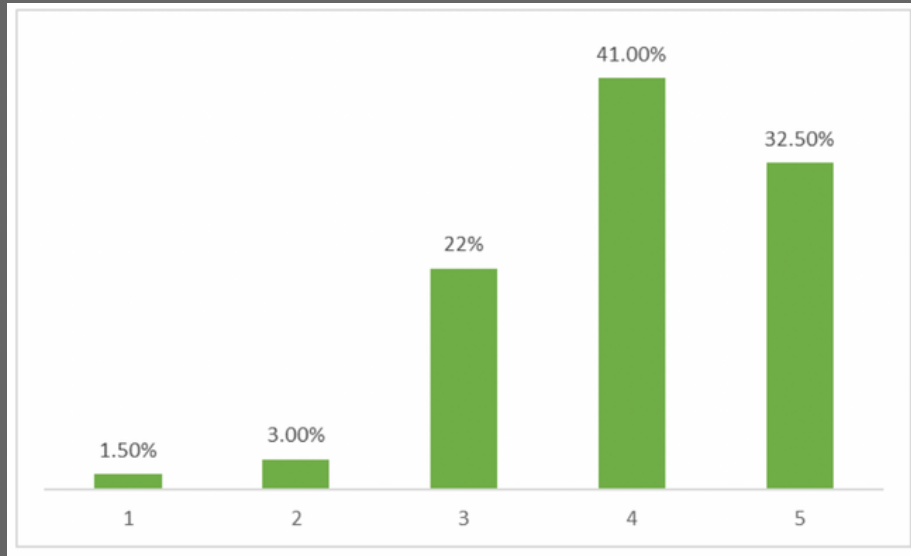
We can observe that the majority are in agreement that they would likely buy a product depending on whether the packaging is sustainable or not. We observe that consumer perception is in fact influenced by sustainable packaging.

On a scale of 1-5, how much do you think eliminating plastic will impact the packaging industry?



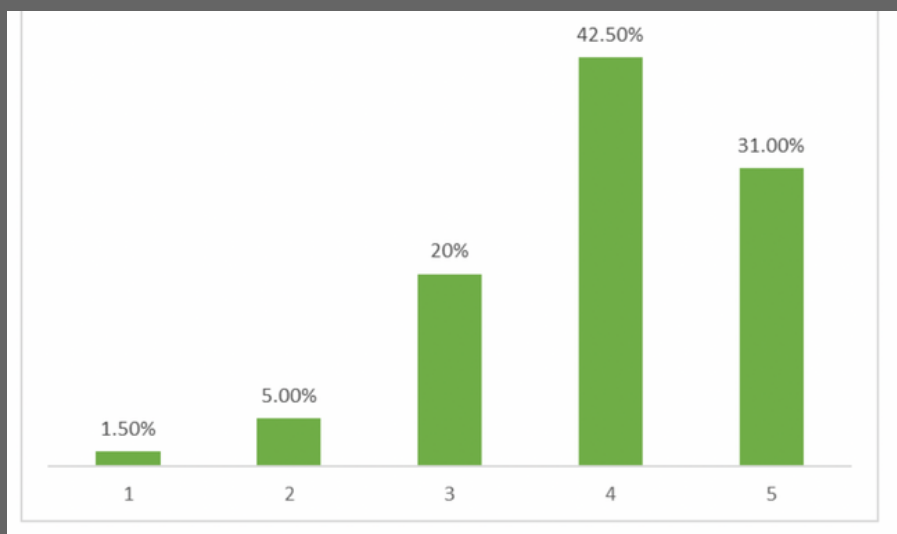
Plastic is a vital part of the packaging industry, its elimination would definitely cause an impact on the packaging industry. As we can observe many believe that its elimination will cause a huge impact.

On a scale of 1-5, how much do you think producers should focus on packaging safety as a key branding element?



As we can observe maximum people agree that producers should focus on packaging safety as a key branding element. This shows consumers tend to buy products with comparatively safe packaging.

On a scale of 1-5, how much do you think product packaging affects the sales of a product?



We can observe that consumers look into the packaging of a product and buy the product accordingly thus affecting the sales of a product.

CONCLUSION

The purpose of this report was to understand the packaging industry in its depth along with its impact in daily lives .

Packaging is an integral part of daily life and this report seeks to inform us all about the industry from its growth to its challenges to new technological innovations and various other aspects.

The survey conducted as a part of the primary research helped us understand the consumers perspective on why they think plastic is widely used in the packaging industry. It also showcased their opinions on whether there is enough action being taken to shift from plastic to its alternatives in the packaging industry. But through the research we also found how aware the people are about the various alternatives. The research also found what features of packaging do the consumers hold in high regard while choosing a product.

The report is also equipped with strategies for easy shift to sustainable packaging. Even though plastic is a material choice it is still not good for the environment. These strategies and recommendations can help in achieving a good solution for a better environment.



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