ISSN 2349-6193
Impact Factor (PIF): 2.243

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AN ANALYTICAL STUDY OF PACKAGING INDUSTRIES WITH REFERENCE TO CHAKAN MIDC AREA

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DOI: 10.5281/zenodo.51035

ABSTRACT
Packaging is the science, art and technology of enclosing or protecting products for distribution, storage, sale, and use. Packaging also refers to the process of design, evaluation, and production of packages. Packaging can be described as a coordinated system of preparing goods for transport, warehousing, logistics, sale, and end use. Packaging contains, protects, preserves, transports, informs, and sells. In many countries it is fully integrated into government, business, institutional, industrial, and personal use.

INTRODUCTION
Packaging is the science, art and technology of enclosing or protecting products for distribution, storage, sale, and use. Packaging also refers to the process of design, evaluation, and production of packages. Packaging can be described as a coordinated system of preparing goods for transport, warehousing, logistics, sale, and end use. Packaging contains, protects, preserves, transports, informs, and sells. In many countries it is fully integrated into government, business, institutional, industrial, and personal use.
Package labeling or labeling is any written, electronic, or graphic communications on the packaging or on a separate but associated label.

OBJECTIVE OF PACKAGING :
Packaging and package labeling have several objectives:

1. Physical protection: The objects enclosed in the package may require protection from, among other things, shock, vibration, compression, temperature, etc.
2. Barrier protection: A barrier from oxygen, water vapour, dust, etc., is often required. Permeation is a critical factor in design. Some packages contain desiccants or Oxygen absorbers to help extend shelf life. Modified atmospheres or controlled atmospheres are also maintained in some food packages. Keeping the contents clean, fresh, sterile and safe for the intended shelf life is a primary function.
3. Containment or agglomeration: Small objects are typically grouped together in one package for reasons of efficiency. For example, a single box of 1000 pencils requires less physical handling than 1000 single pencils. Liquids, powders, and granular materials need containment.
4. Information transmission: Packages and labels communicate how to use, transport, recycle, or dispose of the package or product. With ' pharmaceuticals, food, medical, and chemical products, some types of information are required by governments. Some packages and labels also are used for track and trace purposes.
5. Marketing: The packaging and labels can be used by marketers to encourage potential buyers to purchase the product. Package graphic design and physical design have been important and constantly evolving phenomenon for several decades. Marketing communications and graphic design are applied to the surface of the package and the point of sale display.
6. Security: Packaging can play an important role in reducing the security risks of shipment. Packages can be made with improved tamper resistance to deter tampering and also can have tamper-evident features to help indicate tampering. Packages can be engineered to help reduce the risks of package pilferage: Some package constructions are more resistant to pilferage and some have pilfer indicating seals. Packages may include authentication seals and use security printing to help indicate that the package and contents are not counterfeit. Packages also can include anti-theft devices, such as dye-packs, RFID tags, or electronic substance surveillance tags that can be activated or detected by devices at exit points and require specialized tools to deactivate. Using packaging in this way is a means of loss prevention,
7. Convenience: Packages can have features that add convenience in distribution, handling, stacking, display, sale, opening, reclosing, use, dispensing, and reuse.
8. Portion control: Single serving or single dosage packaging has a precise amount of contents to control usage. Bulk commodities can be divided into packages that are a more suitable size for individual

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households. It is also aids the control of inventory: selling sealed one-liter-bottles of milk, rather than having people bring their own bottles to fill themselves!

PACKAGING TYPES :

Packaging may be looked at as being of several different types. For example a transport package or distribution package can be the shipping container used to ship, store, and handle the product or inner packages. Some identify a consumer package as one which is directed toward a consumer or household. Packaging may be described in relation to the type of product being packaged: medical device packaging, bulk chemical packaging, over-the-counter drug packaging, retail food packaging, military materiel packaging, pharmaceutical packaging, etc.

It is sometimes convenient to categorize packages by layer or function: "Primary", "secondary", etc.

1. Primary packaging is the material that first envelops the product and holds it. This usually is the smallest unit of distribution or use and is the package which is in direct contact with the contents.
2. Secondary packaging is outside the primary packaging, perhaps used to group primary packages together.
3. Tertiary packaging is used for bulk handling, warehouse storage and transport shipping. The most common form is a palletized unit load that packs tightly into containers.

These broad categories can be somewhat arbitrary. For example, depending on the use, a shrink wrap can be primary packaging when applied directly to the product, secondary packaging when combining smaller packages, and tertiary packaging on some distribution packs.

SYMBOLS USED ON PACKAGES AND LABELS :

Many types of symbols for package labeling are nationally and internationally standardized. For consumer packaging, symbols exist for product certifications, trademarks, proof of purchase, etc. Some requirements and symbols exist to communicate aspects of consumer use and safety. Examples of environmental and recycling symbols include: Recycling symbol. Resin identification code, and Green Dot.

Bar codes. Universal Product Codes, and RFID labels are common to allow automated information management in logistics and retailing. Country of Origin Labeling is often used.

SHIPPING CCONTAINER LABELING :

Technologies related to shipping containers are identification codes, bar codes, and electronic data interchange. These three core technologies serve to enable the business functions in the process of shipping containers throughout the distribution channel. Each has an essential function: identification codes either relate product information or serve as keys to other data, bar codes allow for the automated input of identification codes and other data, and EDI moves data between trading partners within the distribution channel. Elements of these core technologies include UPC and EAN item identification codes, the SCC-14, the SSCC-18, Interleaved 2-of-5 and UCC/EAN-128 bar code symbologies, and ANSI ASC X12 and UN/EDIFACT EDI standards.

Small parcel carriers often have their own formats. For example. United Parcel Service has a Maxi Code 2-D code for parcel tracking.

RFID labels for shipping containers are also increasing in usage. A Wal-Mart division, Sam's Club, has also moved in this direction and is putting pressure on its suppliers for compliance.

Shipments of hazardous materials or dangerous goods have special information and symbols as required by UN, country, and specific carrier requirements. Two examples are:

With transport packages, standardized symbols are also used to communicate handling needs. Some common ones are shown while others are listed in ASTM D5445- "Standard Practice for Pictorial Markings for Handling of Goods" and ISO 780 "Pictorial marking for handling of goods".

PACKAGE DEVELOPMENT CONSIDERATIONS :

Package design and development are often thought of as an integral part of the new product development process. Alternatively, development of a package can be a separate process, but must be linked closely with the product to be packaged. Package design starts with the identification of all the requirements: structural design, marketing, shelf life, quality assurance, logistics, legal, regulatory, graphic design, end-use, environmental, etc. The design criteria, performance, completion time targets, resources, and cost constraints need to be established and agreed upon.

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An example of how package design is affected by other factors is the relationship to logistics. When the distribution system includes individual shipments by a small parcel carrier, the sortation, handling, and mixed stacking make severe demands on the strength and protective ability of the transport package.
If the logistics system consists of uniform palletized unit loads, the structural design of the package can be designed to those specific needs: vertical stacking, perhaps for a longer time frame. A package designed for one mode of shipment may not be suited for another.
With some types of products, the design process involves detailed regulatory requirements for the package. For example with packaging foods, any package components that may contact the food are food contact materials. Toxicologists and food scientists need to verify that the packaging materials are allowed by applicable regulations. Packaging engineers need to verify that the completed package will keep the product safe for its intended shelf life with normal usage. Packaging processes, labeling, distribution, and sale need to be validated to comply with regulations and have the well being of the consumer in mind. Sometimes the objectives of package development seem contradictory. For example, regulations for an over-the-counter drug might require the package to be tamper-evident and child resistant: These intentionally make the package difficult to open.. The intended consumer, however, might be handicapped or elderly and be unable to readily open the package. Meeting all goals is a challenge.
Package design may take place within a company or with various degrees of external packaging engineering: independent contractors, consultants, vendor evaluations, independent laboratories, contract packagers, total outsourcing, etc. Some sort of formal Project planning and Project management methodology is required for all but the simplest package design and development programmes. An effective quality management system and Verification and Validation protocols are mandatory for some types of packaging and recommended for all.
Package development involves considerations for sustainability, environmental responsibility, and applicable environmental and recycling regulations. It may involve a life cycle assessment which considers the material and energy inputs and outputs to the package, the packaged product, the packaging process, the logistics system, waste management, etc. It is necessary to know the relevant regulatory requirements for point of manufacture, sale, and use.
The traditional "three R's" of reduce, reuse, and recycle are part of a waste hierarchy which may be considered in product and package development.

1. Prevention: Waste prevention is a primary goal. Packaging should be used only where needed. Proper packaging can also help prevent waste. Packaging plays an important part in preventing loss or damage to the packaged-product Usually, the energy content and material usage of the product being packaged are much greater than that of the package. A vital function of the package is to protect the product for its intended use: if the product is damaged or degraded, its entire energy and material content may be lost.
2. Minimization: The mass and volume of packaging can be measured and used as one of the criteria to minimize during the package design process. Usually "reduced" packaging also helps minimize costs. Packaging engineers continue to work toward reduced packaging.
3. Reuse: The reuse of a package or component for other purposes is encouraged. Returnable packaging has long been useful for closed loop logistics systems. Inspection, cleaning, repair and recouperage are often needed. Some manufacturers re-use the packaging of the incoming parts for a product, either as packaging for the outgoing product or as part of the product itself.
4. Recycling: Recycling is the reprocessing of materials into new products. Emphasis is focused on recycling the largest primary components of a package: steel, aluminum, papers, plastics, etc. Small components can be chosen which are not difficult to separate and do not contaminate recycling operations.
5. Energy recovery: Waste-to-energy and Refuse-derived fuel in approved facilities are able to make use of the heat available from the packaging components.
6. Disposal: Incineration, and placement in a sanitary landfill ate needed for some materials. Certain states within the US regulate packages for toxic contents, which have the potential to contaminate emissions and ash from incineration and leachate from landfill.

Packages should not be littered.

Development of sustainable packaging is an area of considerable interest by standards organizations, government, consumers, packagers, and retailers.

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CONCLUSION :

Thus packaging is very important that's why I selected the subject for my minor research is "Survey of Packaging Industries in Chakan MIDC Area, Pune (MS)" 2012-13 which is helpful to society, industrialist & Government also.

RESEARCH METHODOLOGY

The kinds of data that I have used in my project include both primary and secondary data.
Reasons for collecting Primary data :
The main reason for selecting Primary data is as the secondary data can not provide enough information for doing this study and same fresh data are required. These data are original in character.
In this study personal interviews in the form of structured questionnaire are prepared to collect primary data.
Advantages of Interview method :

1. The information secured through interviews is likely to be more correct compared to that secured through other techniques.
2. Interview is a much more flexible approach: allowing for posing of new questions, if needs.
3. The language of the interview can be adopted to the ability or educational level to the person interviewed.
4. The interview is a more appropriate technique for revealing.

The other source of data which is used as a supplementary source of data in this study is secondary data.
These kind of data are those which have already been collected by some One else.
The secondary data used in this study have been collected from boos and Websites.
In simple words packaging is an act of designing & producing the container & wrapper for the product. The package on the other hand is the wrapper or the container in which the product enclosed, sealed or wrapped. Again we may differentiate packaging in a here types, viz. the primary package, i.e. the intermediate container of the product. Thus, the bottle containing the Godrej liquid hair drier is primary package. The Secondary package in the other hand refers to material that products the primary package & is ignored when the product is about to be used. Finally a shipping package refers to the packaging which is necessary for storage. Now a day's packaging has become marketing device. There are many reasons for packaging a product which us its usefulness.

OBJECTIVE :

1. To protect the product from any damage, deterioration or spoilage.
2. To differentiate an identify it from the other classes of products.
3. To make the product more sale-able.
4. To allow a greater easy in handling.
5. To give a greater convenience in use.
6. To nourish the company brand image

METHODOLOGY :

It is hoped that the results obtained will have the following practical applications or utility.
1. Changing Strategy

- To provide more product protection & handling convenience.
- To expedite the company promotion programmes.
- Cope up with revolutionizing innovations in the field of packaging.

2. Family packaging strategy.
3. Reuse packaging strategy.
4. Multiple packaging strategy.
5. Ecological packaging strategy.

YEAR – WISE PLAN OF WORK AND TARGETS TO BE ACHIEVE
FIRST YEAR

- Collect the information regarding Chakan M.I.D.C. area.
- Survey of Chakan M.I.D.C. area.
- Collect the information regarding packaging policies.
- Identification & Functioning Chakan M.I.D.C. packaging industry.

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SECOND YEAR

- Functioning particulars of packaging.
- Statistical analysis of packaging industry data.
- Comparative analysis & recommendation of Chakan M.I.D.C. area.

Details of collaboration, if any intended.

SAMPLING TECHNIQUES :

It is helpful to study the performance of Chakan MIDC Industrial sector with reference to employment opportunities in packaging industries as well as its contribution to the society. To see how packaging industries are helpful is very important from the Govt., & Society point of view.

DATA COLLECTION & ANALYSIS

The apparent slowdown in the manufacturing sector has not deterred small and medium scale enterprises from seeking to set up shop in the industrial areas of Chakan and Khed. As per Ajit Relekar, regional officer of Maharashtra Industrial Development Corporation (MIDC), more than 3,000 companies are waiting for land to be allocated to them in the industrial areas.

"Good road infrastructure, ready market and other ancillary reasons attract industries," he said. Land is granted to the companies at a huge concessional rate and on a first-come-first-served basis.

The recent decision of Bharat Forge to scrap their special economic zone (SEZ) in Khed has put a question mark over the industrial future of the area. The company had applied for SEZ and had plans to develop it as an industrial hub. The phase II of the proposed Khed SEZ, which was to be developed by MIDC and private companies, had also come under the cloud. The proposed second SEZ was to come up over 112 hectares.

Dispelling doubts about the project, Relekar said MIDC had decided to go ahead with developing the land itself. At present, the land acquisition process is in its last stage, with talks about amount of compensation going on. Land for more than 20 villages in the region is to be included in the area.

Speaking about the proposed development in the area, Relekar said emphasis would be put on building infrastructure. Road connectivity is a major issue with no proper approach road for the site. "Also in order to attract business in the region, six-laning of the Pune-Nashik Road has to be completed. The project is stuck near Talegaon because of land acquisition issues. Once it is cleared, we hope more investment would roll into the area."

THE INDUSTRY :

MIDC – Chakan, Taluka Khed, District Pune.

I) CAC Units RED (>75 Crs)	23
II) CAC Units RED (25 to 75 Crs)	10
III) ORANGE (>750 Crs)	01
IV) ORANGE (250 to 750 Crs)	00
Below (1 to 25 Crs)	219

From the above industries the survey's are conducted of 69 industries which are classified as under.

1.	Category	02
2.	Category	02
3.	Category	01
4.	Category	00
5.	Category	64
	Total	69

Total 69 industries are covered in survey which questionnaires. The Researcher has visited industry & collected the information from the spot.

The questionnaire is included 3 parts.

I Part – Personal Information.

II Part – It includes the Marketing / Sales practices.

III Part – It includes the Distribution & Logistic Functions.

Questionnaires Analysis :

1. It is observed that industrial relations in the Packaging industries started in pune region are peaceful in the contest of global situation.

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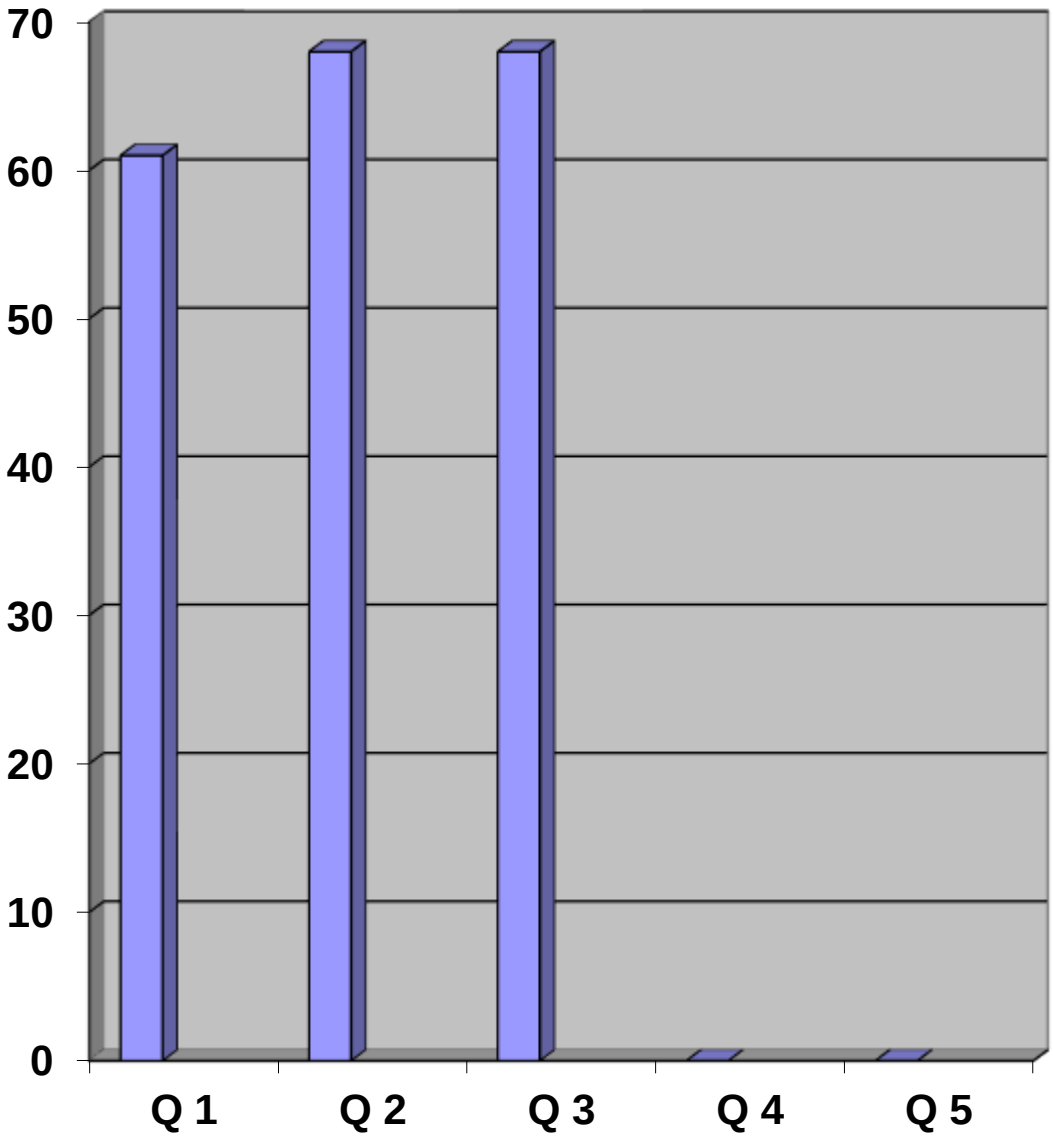
2. It is observed that for improving industrial relations in packaging industries will have to be better work environment & pollution free plants.

SECTION A

Question No : 01
Marketing Sales Practices



It is observed that Marketing / Sales practices are adopted regarding packaging material which minimal import on the environment is 90% industries are in favors with preference 1. 98 % industries are in favors with commitment to invest in green R & D initiatives & 99 % industries integrates green Marketing into Marketing Mix with eco - friendly products.

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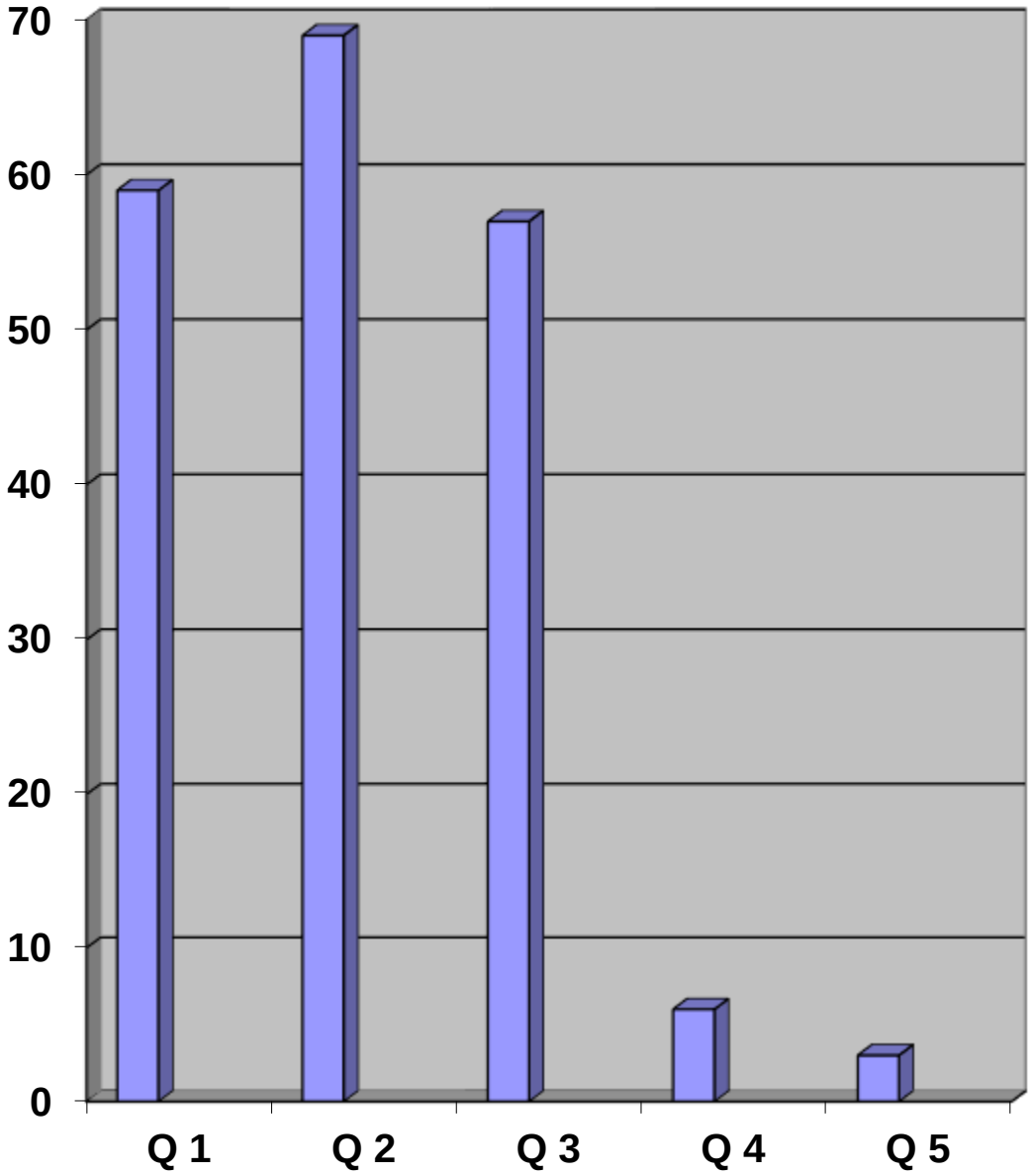
Question No : 02
Commitment to invest in green R & D initiatives



It is observed that Marketing / Sales practices are adopted regarding packaging material which minimal import on the environment is 85% industries are in favors with preference 1. 99 % industries are in favors with commitment to invest in green R & D initiatives & 80 % industries intergrades green Marketing into Marketing Mix with eco - friendly products

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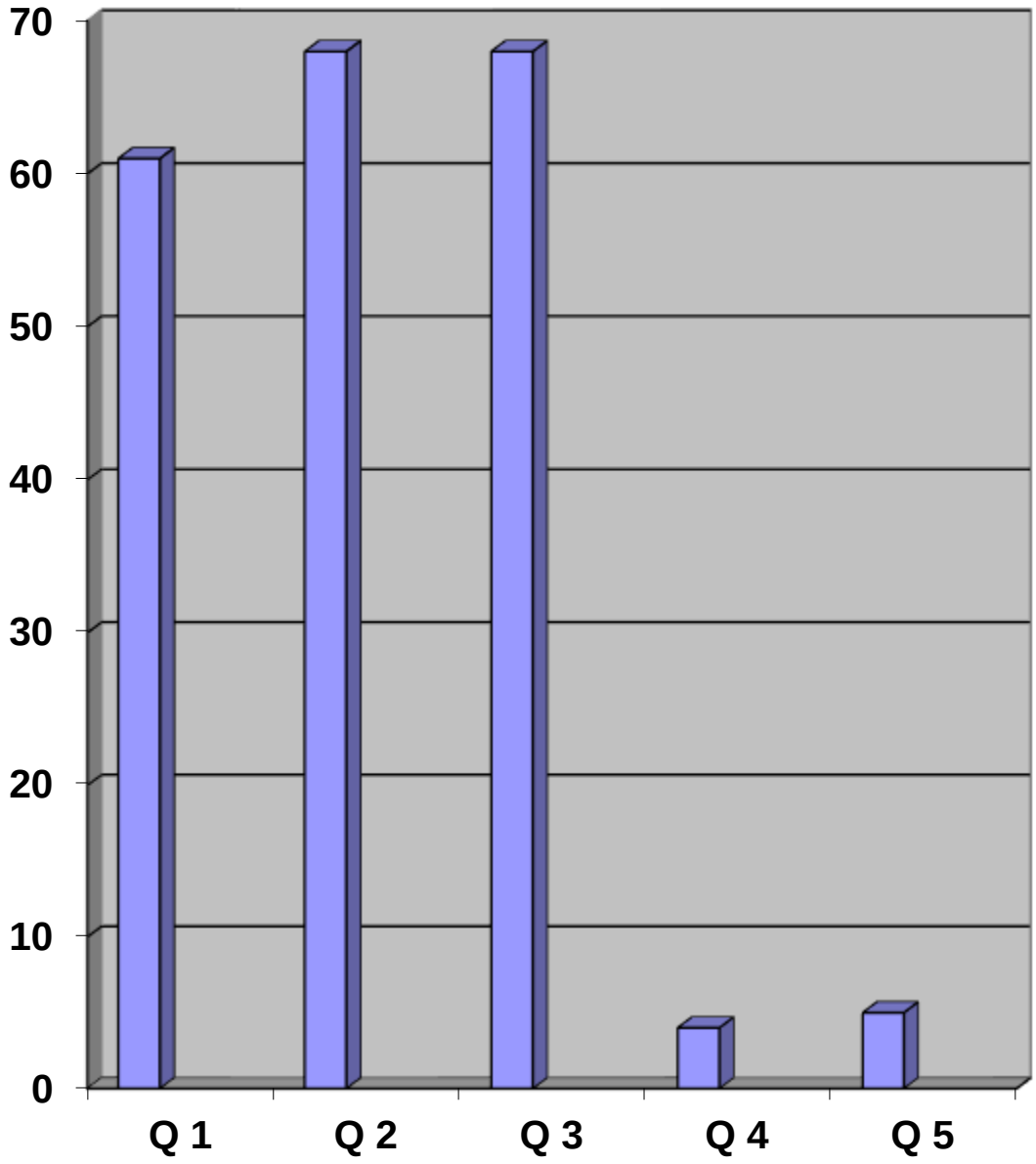
Question No : 03
Integrate green marketing into the marketing mix with eco-friendly products.



It is observed that Marketing / Sales practices are adopted regarding packaging material which minimal import on the environment is 82% industries are in favors with preference 1. 98 % industries are in favors with commitment to invest in green R & D initiatives & 98 % industries integrates green Marketing into Marketing Mix with eco - friendly products

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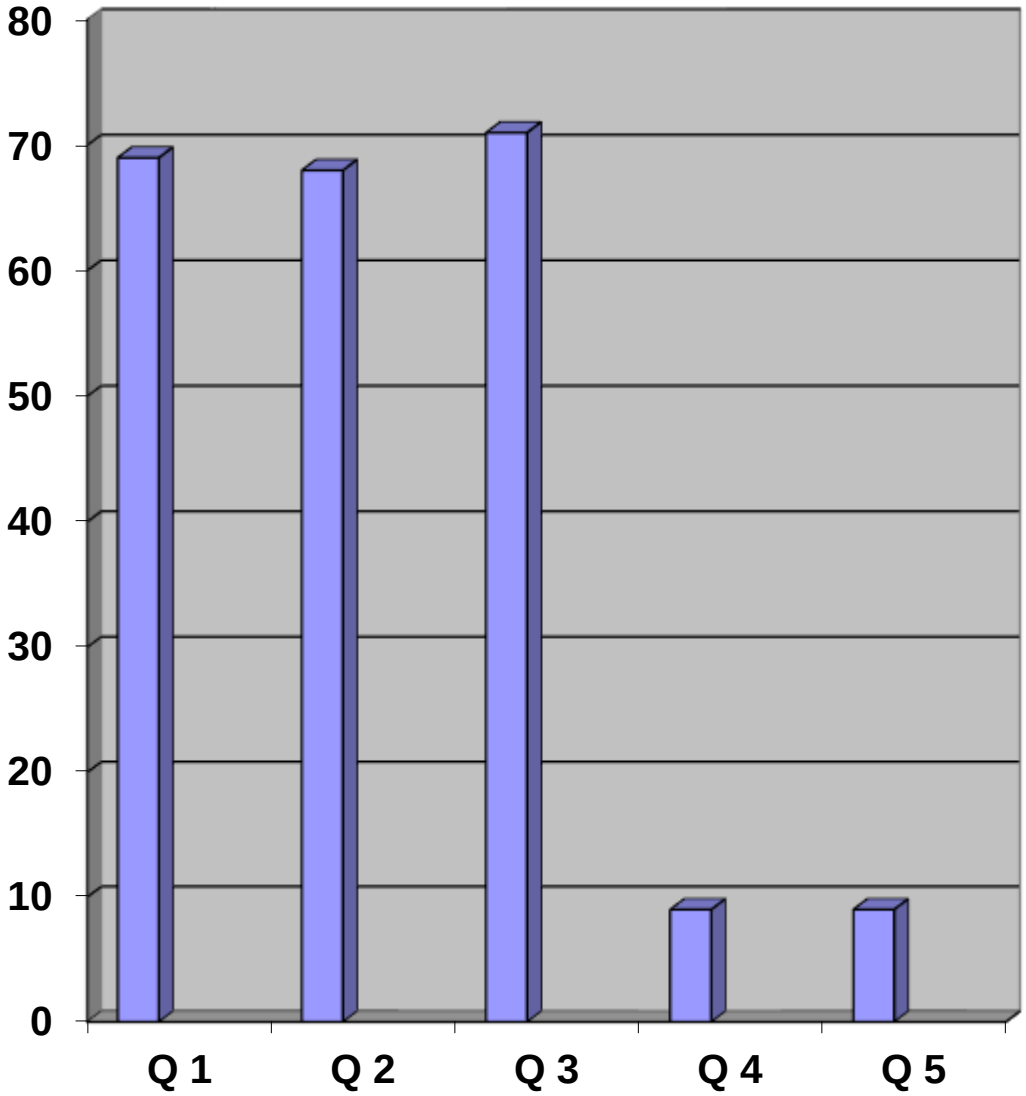
SECTION B

Question No : 01

Reduce distance travel led for raw materials and finished products.



It is observed that Marketing / Sales practices are adopted regarding packaging material which minimal import on the environment is 98% industries are in favors with preference 1. 96 % industries are in favors with commitment to invest in green R & D initiatives, 100 % industries integrates green Marketing into Marketing Mix with eco - friendly products & It is found that established supplier partnership to share warehouses and fleets are 8% only. Regarding Identification shortest distance between warehouse & customer to save fuel cost are 10%. Limit Carbon emissions (according to regulation is 9%. Use bio fuels as fuel alternative and greener technologies is very less 10%).

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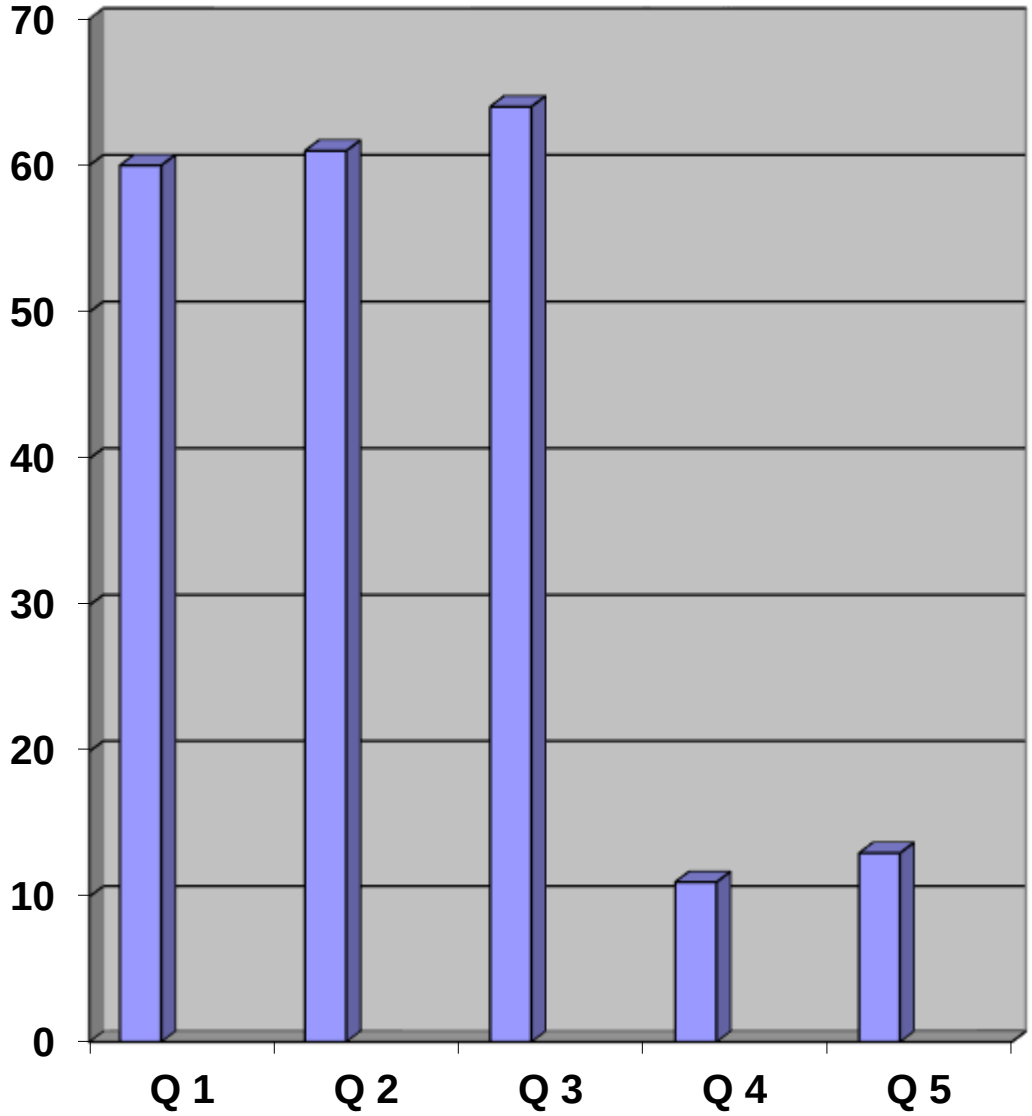
Question No : 02

Need to have a green or sustainable building (e.g. multi-level warehouse)



It is observed that Marketing / Sales practices are adopted regarding packaging material which minimal import on the environment is 85% industries are in favors with preference 1. 88 % industries are in favors with commitment to invest in green R & D initiatives, 90 % industries integrates green Marketing into Marketing Mix with eco - friendly products & It is found that established supplier partnership to share warehouses and fleets are 12% only. Regarding Identification shortest distance between warehouse & customer to save fuel cost are 14%. Limit Carbon emissions (according to regulation is 9%. Use bio fuels as fuel alternative and greener technologies is very less 10%).

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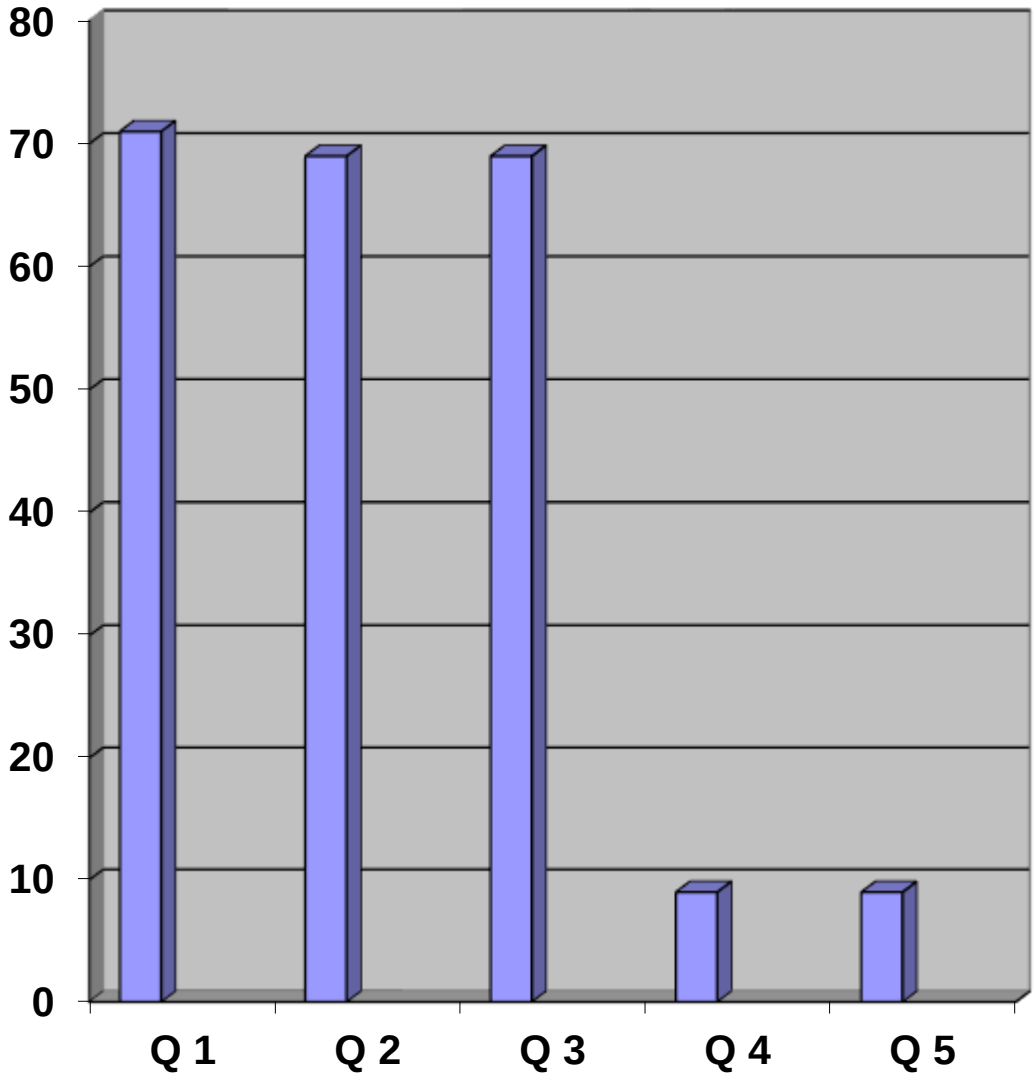
Question No : 03

Save warehouse space by cutting transport costs and number of trips.



It is observed that Marketing / Sales practices are adopted regarding packaging material which minimal import on the environment is 100% industries are in favors with preference 1. 98 % industries are in favors with commitment to invest in green R & D initiatives, 96 % industries integrates green Marketing into Marketing Mix with eco - friendly products & It is found that established supplier partnership to share warehouses and fleets are 8% only. Regarding Identification shortest distance between warehouse & customer to save fuel cost are 9%. Limit Carbon emissions
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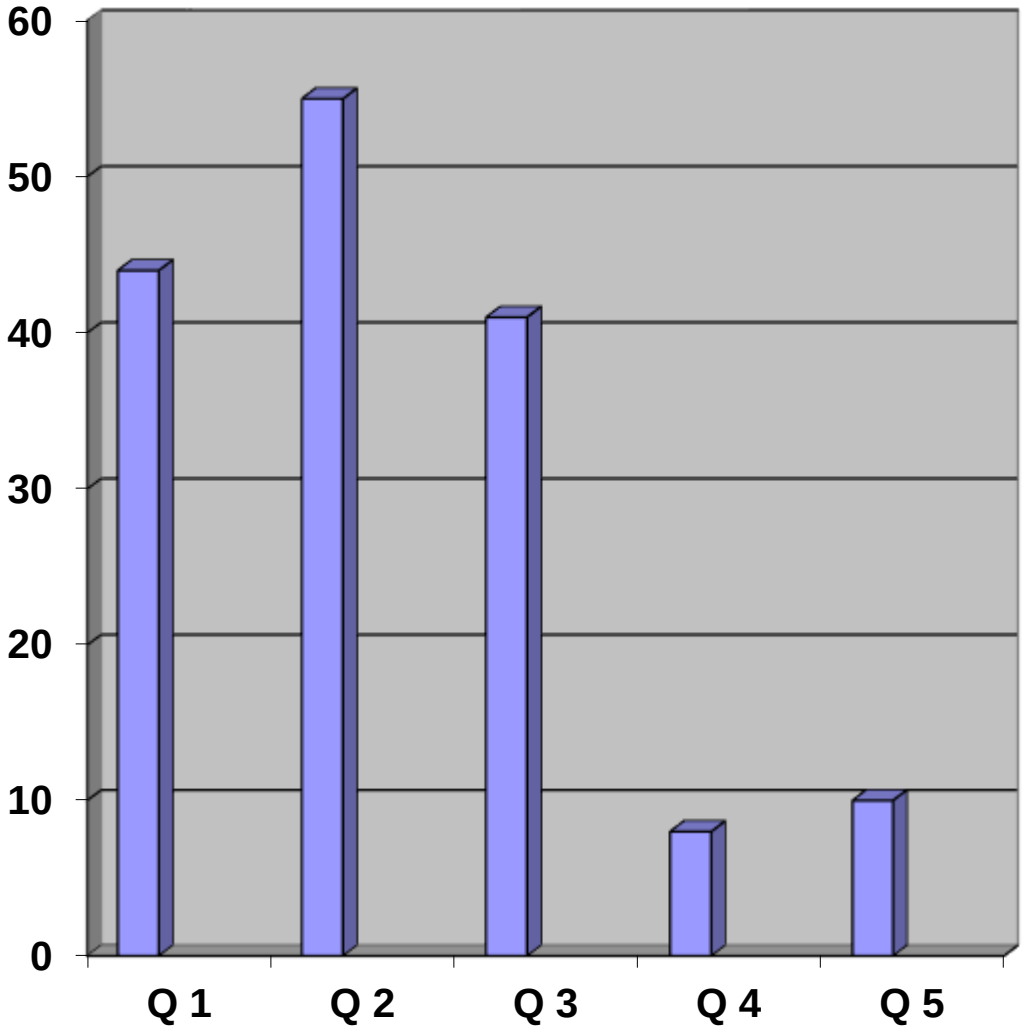
Question No : 04

Establish suppliers' partnerships to share warehouses and fleets.



It is observed that Marketing / Sales practices are adopted regarding packaging material which minimal import on the environment is 75% industries are in favors with preference 1. 86 % industries are in favors with commitment to invest in green R & D initiatives, 71 % industries integrates green Marketing into Marketing Mix with eco - friendly products & It is found that established supplier partnership to share warehouses and fleets are 8% only. Regarding Identification shortest distance between warehouse & customer to save fuel cost are 10%. Limit Carbon emissions (according to regulation is 9%. Use bio fuels as fuel alternative and greener technologies is very less 10%).

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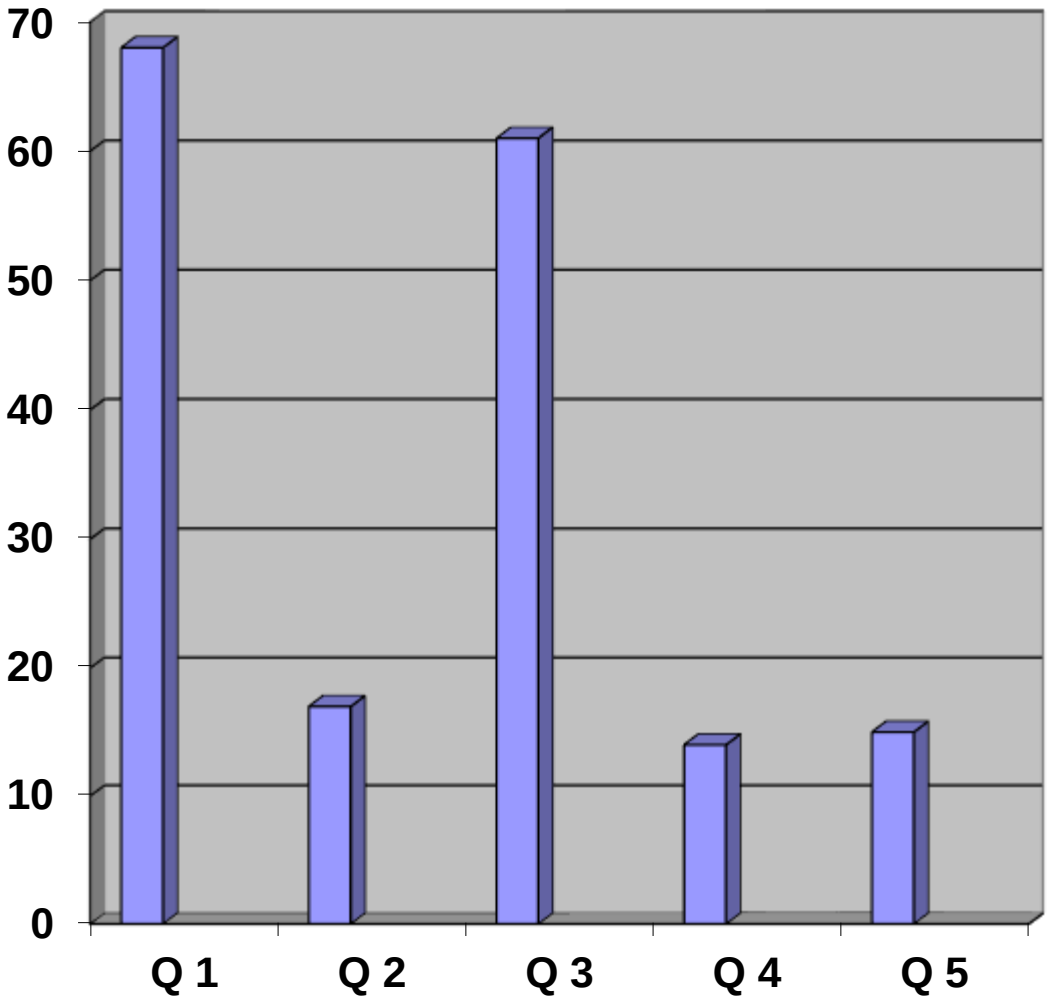
Question No : 05

Identify shortest distance between warehouse and customers to save fuel costs.



It is observed that Marketing / Sales practices are adopted regarding packaging material which minimal import on the environment is 94% industries are in favors with preference 1. 18 % industries are in favors with commitment to invest in green R & D initiatives, 86 % industries integrates green Marketing into Marketing Mix with eco - friendly products & It is found that established supplier partnership to share warehouses and fleets are 14% only. Regarding Identification shortest distance between warehouse & customer to save fuel cost are 15%. Limit Carbon emissions (according to regulation is 9%. Use bio fuels as fuel alternative and greener technologies is very less 10%).

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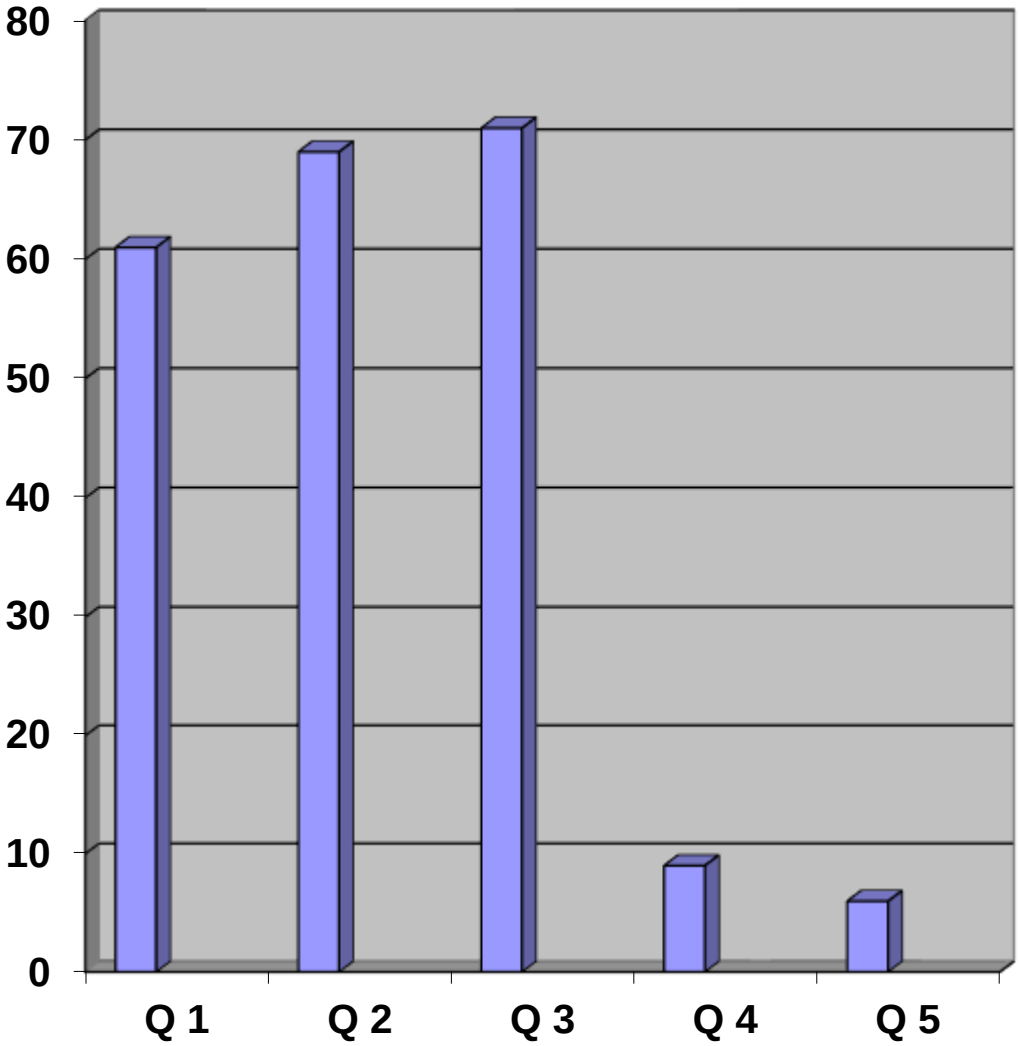
Question No : 06

Limit carbon emissions (according to legislation) linked to movement of goods, transit packaging.



It is observed that Marketing / Sales practices are adopted regarding packaging material which minimal import on the environment is 84% industries are in favors with preference 1. 96 % industries are in favors with commitment to invest in green R & D initiatives, 100 % industries integrates green Marketing into Marketing Mix with eco - friendly products & It is found that established supplier partnership to share warehouses and fleets are 9% only. Regarding Identification shortest distance between warehouse & customer to save fuel cost are 7%. Limit Carbon emissions (according to regulation is 9%. Use bio fuels as fuel alternative and greener technologies is very less 10%).

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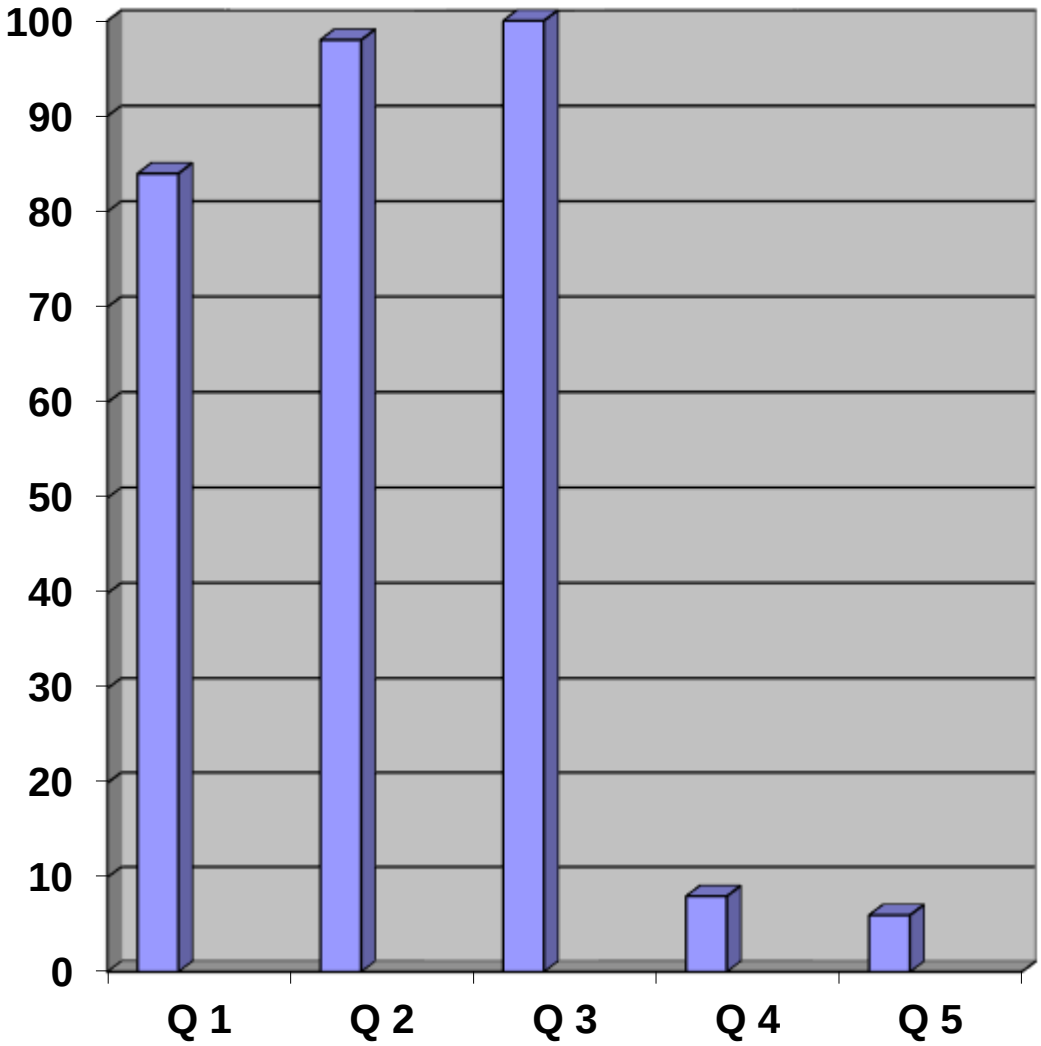
Question No : 07

Use bio fuels as fuel alternative and greener technologies.



It is observed that Marketing / Sales practices are adopted regarding packaging material which minimal import on the environment is 84% industries are in favors with preference 1. 98 % industries are in favors with commitment to invest in green R & D initiatives, 100 % industries integrates green Marketing into Marketing Mix with eco - friendly products & It is found that established supplier partnership to share warehouses and fleets are 8% only. Regarding Identification shortest distance between warehouse & customer to save fuel cost are 6%. Limit Carbon emissions (according to regulation is 9%. Use bio fuels as fuel alternative and greener technologies is very less 10%).

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FINDINGS & SUGGESTIONS

On the basis of questionnaire analysis following are important finding

1. Packaging Machines

A choice of packaging machinery includes: technical capabilities, labour requirements, worker safety, maintainability, serviceability, reliability, ability to integrate into the packaging line, capital cost, floor space, flexibility, energy usage, quality of outgoing packages, qualifications, throughput, efficiency, productivity, ergonomics, return on investment, etc.

Packaging machines may be of the following general types:

- Blister packs, skin packs and Vacuum Packaging Machines
- Bottle caps equipment, Over-Capping, Lidding, Closing, Seaming and Sealing Machines
- Box, Case and Tray Forming, Packing, Unpacking, Closing and Sealing Machines
- Cartoning machines
- Cleaning, Sterilizing, Cooling and Drying Machines
- Converting Machines
- Conveyor belts, Accumulating and Related Machines
- Feeding, Orienting, Placing and Related Machines
- Filling Machines: handling liquid and powdered products
- Inspecting, Detecting and Check weigher Machines
- Label dispensers Help peel and apply labels more efficiently
- Package Filling and Closing Machines
- Palletizing, Depalletizing, Unit load assembly
- Product Identification: labeling, marking, etc.
- Shrink wrap Machines
- Form, Fill and Seal Machines
- Other specialty machinery: slitters, perforating, laser cutters, parts attachment, etc.

2. Active Packaging

The terms active packaging, intelligent packaging, and smart packaging refer to packaging systems used with foods, pharmaceuticals, and several other types of products. They help extend shelf life, monitor freshness, display information on quality, improve safety, and improve convenience.

The terms are closely related. Active packaging usually means having active functions beyond the inert passive containment and protection of the product. Intelligent and smart packaging usually involve the ability to sense or measure an attribute of the product, the inner atmosphere of the package, or the shipping environment. This information can be communicated to users or can trigger active packaging functions.

3. Moisture Control

For many years, desiccants have been used to actively control the moisture in a closed package. A desiccant is a hygroscopic substance usually in a porous pouch, is placed inside of a package. They have been used to reduce corrosion of machinery and to extend the shelf life of moisture sensitive foods and drugs.

4. Oxygen Control

Oxygen scavengers or Oxygen absorbers help remove oxygen from a closed package. Some are small packets or sachets containing powdered iron: as the iron rusts, oxygen is removed from the surrounding atmosphere. Newer systems are on cards or can be built into package films or molded structures.

5. Atmosphere

With some products, such as cheese, it has long been common to flush the package with nitrogen prior to sealing the inert nitrogen is absorbed into the cheese, allowing a tight shrink film package. The nitrogen removes oxygen and "actively" interacts with the cheese to make the package functional.

More recently, other mixtures of gas have been used inside the package to extend the shelf life. The gas mixture depends on the specific product and its degradation mechanisms. Some package components have been developed that incorporate active chemistry to help maintain certain atmospheres in packages.

6. Temperature Monitor

Some temperature indicators give a visual signal that a specified temperature has been exceeded. Others, Time temperature indicators, signal when a critical accumulation of temperature deviation over time has been exceeded. When the mechanism of the indicator is tuned to the mechanism of product degradation, these can provide valuable signals for consumers. Digital temperature data loggers record the temperatures encountered throu-out the shipment. This data can be used to predict product degradation and help

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determine if the product is suited for normal sale or if expedited sale is required. They also determine the time of the temperature excess: this can be used to direct corrective action.

7. Controlling Package Temperatures

For critical vaccines, insulated shipping containers are passive packaging to help control the temperatures fluctuations seen even with a controlled cold chains. In addition, gel packs are often used to actively keep the temperature of the contents within specified acceptable temperature ranges. Some newer packages have the ability to heat or cool the product for the consumer. These have segregated compartments where exothermic or endothermic reactions provide the desired effect.

8. Dispensing Systems

Some packages have closures or other dispensing systems that actively change the contents from a liquid to an aerosol. These are used for products ranging from precision inhalers for medications to spray bottles of household cleaners.

Some dispensing packages for two-part epoxy adhesives do more than passively contain the two components. When dispensed, some packages meter and mix the two components so the adhesive is fully functioning at the point of application.

9. Rfid

Radio-frequency identification chips are becoming more common as smart labels that are used to track and trace packages and unit loads throughout distribution. Newer developments include recording the temperature history of shipments and other intelligent packaging functions.

10. Shock and Vibration

Shock detectors have been available for many years. These are attached to the package or to the product in the package to determine is an excessive shock has been encountered. The mechanisms of these shock overload devices have been spring-mass systems, magnets, drops of red dye, and several others.

Recently, digital data loggers have been available to more accurately record the shocks and vibrations of shipment.

11. Other Developments

Some newer packaging films contain enzymes, anti bacterial agents, scavengers, and other active components to help control food degradation.

12. Regulations

Active packaging is often designed to actively interact with the contents of the package. Thus extra care is often needed for active or smart packagings that are food contact materials.

Food packagers take extra care with some types of active packaging. For example when the oxygen atmosphere in a package is reduced for extending shelf life, controls for anaerobic bacteria need to be considered. Also when a controlled atmosphere reduces the appe

13. Keep Case

A keep case or poly-box is a type of DVD packaging. From the well-known brand Amaray, this type of case is often called Amaray case, creating a generalized trademark and ambiguities about the real manufacturer of the case.

Besides DVD-Video films, keep cases are used in most video games for the Xbox, Xbox 360, PlayStation 2, Nintendo GameCube and Wii, as well as PC titles and MP3-CD audio-books.

14. Aseptic Processing

Aseptic processing is the process by which a sterile product is packaged in a sterile container in a way which maintains sterility.

15. Authentication

Authentication is the performance of establishing or confirming something as authentic, that is, that claims made by or about the subject are true. This might involve confirming the identity of a person, tracing the origins of an artifact, ensuring that a product is what its packaging and labeling claims to be, or assuring that a computer programme is a trusted one. Authentication can also be used for identity delegation. Identity Delegation in IT network is an evolving field.

16. Bag-in-Box

In packaging, a Bag-in-Box or BiB is a type of container for the storage and transportation of liquids. It consists of a strong bladder, usually made of several layers of metallised film or other plastics, seated inside a corrugated fiber-board box. The bag is supplied to the 'filler' as an empty pre made bag. The 'filler' then generally removes the tap, fills the bag and then replaces the tap. The bags are available as singles for semi-automatic machines or as web bags, where the bags have perforations between each one. These are used on automated filling systems where the bag is separated on line either before the bag is automatically filled or

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after. There is now a technology available called FSF and pioneered by Scholle where equipment is supplied to the filler who manufactures the bags on-line from reels of film, then the Flexi-Tap is inserted then filled on the Scholle line.

17. Battle Bag

The Battle Bag, or Mann Bag, is a lightweight load carrying system designed to allow the Combat Infantryman to carry enough ammunition and ancillaries such as medical supplies, spare batteries and radio equipment. There are a multitude of different suppliers for these, with the British Army having designed its own version for issue under the PECOC programme. The key compartments, or pouches, on the battle bag consist of the main compartment, 3 to 4 ammo pouches, an FFD pouch, and a radio pouch, which is usually mounted within the main compartment. Some designs of battle bags have MOLLE strips on them, to allow the user to accessories the bag to their operational requirements. Others, such as the Black-Hawk bag, have an internal map case.

18. Buster Pack

Blister pack is a term for several types of pre-formed plastic packaging used for small consumer goods.
The two primary components of a blister pack are the cavity or pocket made from a "formable" web, either plastic or aluminium - and the lidding, made from paper, carton, plastic or aluminium. The "formed" cavity or pocket contains the product and the "lidding" seals the product in the package.

19. Bottle Cap

Bottle caps, or Closures, are used to seal the openings of bottles of many types. They can be small circular pieces of metal, usually steel, with plastic backings, and for plastic bottles a plastic cap is used instead. A bottle cap is typically colourfully decorated with the logo of the brand of beverage. Caps can also be plastic, sometimes with a pour spout. Flip-Top caps like Flapper closures provide controlled dispensing of dry products. Bottle caps are often made of a different type of plastic than the bottle itself, and are often recyclable.

20. Bottle Crate

A bottle crate or beverage crate is a container used for transport of beverage containers. In the present day they are usually made of plastic, but before the widespread use of plastic they tended to be made of wood or metal.

21. Box Sealing Tape

Box sealing tape or parcel tape is a pressure sensitive tape used for closing or sealing corrugated fiber-board boxes. It consists of a pressure sensitive adhesive coated onto a backing material which is usually a polypropylene or polyester film which is oriented to have strength in both the long direction and the cross direction.

22. Boxtop

A boxtop, in the context of being a proof of purchase, is understood to be the upper portion of a product box, detached, and mailed as part of a claim for a radio premium or other advertising offer. During the 1930s through 1950s, cereal boxtops were usually the most common proofs of purchase used to claim such premiums.
Popular cereal boxtops of the period were Wheaties, which sponsiored Jack Armstrong, the Ail-American Boy; Kellogg's Pep, which sponsored The Adventures of Superman; Ralston-Purina, which sponsored Tom Mix Ranston Straight Shooters; and various General Mills, particularly Cheerios and Kix, which sponsored The Lone Ranger.

23. Child-Resistant Packaging

Child-resistant packaging or C-R packaging is special packaging used to reduce the risk of children ingesting dangerous items. This is often accomplished by the use of a special safety cap. It is required by regulation for prescription drugs, over-the-counter medications, pesticides, and household chemicals. In some juridictions, unit packaging such as blister packs is also regulated for child safety.
The United States Consumer Product Safety Commission has stated in a press release that "There is no such thing as child-proof packaging. So you shouldn't think of packaging as your primary line of defence. Rather, you should think of packaging, even child-resistant packaging, as your last line of defence."

24. Fair Packaging and Labeling Act

The Fair Packaging and Labeling Act is a US law that applies to labels on many consumer products. /(requires the label to state:

- The identity of the product;
- The name and place of business of the manufacturer, packer, or distributor; and

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- The net quantity of contents.

The contents statement must include both metric and U.S. customary units.

25. Food Labeling Regulations

The law in the UK on food labeling is multifaceted and is spread over many reforms and parliamentary acts, making the subject complex. In the US, food labeling is mainly regulated by 21 CFR part 101 in accordance with 21 CFR 1.21, 74.705, Part 102, 104.20, 179.26 and FD&C. Codex Alimentarius also published a document on the food labeling which is supposed to be followed by the food industry internationally.

Nevertheless, there are general laws which should be implied on any food product:

- Name: Must also inform the customer the nature of the product. It may also be necessary to attach a description to the product name. However, there are certain generic names which must be only used for their conventional uses, for example: Muesli, Coffee, prawns.
- Ingredients: All ingredients of the food must be stated under the heading[1] Ingredients' and must be stated in descending order of weight. Moreover, certain ingredients such as preservatives must be identified as such by the laber Preservatives', a specific name, e.g. "sodium nitrite", and the corresponding European registration number colloquially known as an "E number", e.g."E250".
- Nutritional Information: Although it is not a legal requirement to declare Nutritional information on the product, if the manufacturer makes claims that the product is 'Low in Sugar', it must be supported with nutritional information. However, as a rule it is recommended to declare nutritional information as consumers more than ever are investigating this information before making a purchase. Moreover, there are two European nutritional labeling standards which must be adhered to if nutritional information is shown.
- Medicinal or Nutritional Claims: Medicinal and Nutritional claims are tightly regulated, some are only allowed under certain conditions while others are not authorized at all. For example, presenting claims the food product can treat, prevent or cure diseases or other' adverse conditions' are prohibited. While claiming the food is reduced in fat or rich in vitamins require the food to meet compulsory standards and grades, in addition, the terms must be used in a form specified in regulations.
- Date Tagging: There are two types of date tagging:

26. Plastic Bag

A plastic bag or pouch is a type of flexible packaging made of thin, flexible, plastics film. Plastic bags are used for containing and transporting goods such as foods, produce, powders, ice, chemicals and waste.

Most plastic bags are heat sealed together. Some are bonded with adhesives or are stitched. A press-to-close zipper can be used to open and close the bag many times.

27. Pharmaceutical Packaging

Pharmaceutical packaging has to be carried out for the purpose of the safety of the pharmaceutical preparations in order to keep them free from contamination and hinder microbial growth in the pharmaceuticals. Packaging is one of the most important tools in the pharmaceutical industry and various pharmaceutical preparations are being used.

28. Packaging Gas

A packaging gas is a gas used to pack sensitive materials in a modified atmosphere. It is usually inert, or of a nature that protects the packaged goods, thus inhibiting reactions such as spoilage. Some may also serve as propellant for aerosols like whipped cream.

For packaging food, various gases are approved.

29. Packaging Engineering

Packaging engineering, also Package engineering is a broad topic ranging from design conceptualization to product placement. All steps along the manufacturing process, and more, must be taken into account in the design of the package for any given product. Package engineering includes industry-specific aspects of industrial engineering, marketing, materials science, industrial design and logistics. Packaging engineers must interact with Research and Development, Manufacturing, Marketing, Graphic Design, Regulatory, Purchasing, Planning and so on. The package must sell and protect the product, while maintaining an efficient, cost-effective process cycle.

30. Package Testing

Package testing or Packaging testing involves the measurement of a characteristic involved with packaging. This includes packaging materials, packaging components, primary packages, shipping containers, and unit loads, as well as the associated processes.

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Testing measures the effects and interactions of the levels of packaging, the package contents, external forces, and end-use.
It can involve controlled laboratory experiments, subjective evaluations by people, or field testing. Documentation is important: formal test method, test report, photographs, video, etc.

SUGGESTIONS :

Following are important suggestion on the basis of findings

1. Importance of testing

For some types of products, package testing is mandated by regulations: food, pharmaceuticals, medical devices, dangerous goods, etc. This may cover both the design qualification, periodic retesting, and control of the packaging processes. Processes may be controlled by a variety of quality management systems such as HACCP, statistical process control, validation protocols, ISO 9000, etc.
For unregulated products, the degree of package testing can be a business decision.
Risk management may involve factors such as:

- Costs of packaging
- Costs of package testing
- Value of contents being shipped
- Value of customer's good will
- Product liability exposure
- Other potential costs of inadequate packaging
- Etc

With distribution packaging, one vital packaging development consideration is to determine that a product will not be damaged throughout the entire process of getting to the customer from the manufacturer. A primary purpose of a package is to ensure the safety of a product during transportation and storage. If a product is damaged during this process, then the package has failed to accomplish its primary objective and the customer will either return the product or be unlikely to purchase the product altogether.
Package testing is often a formal part of Project management programmes. Packages are usually tested when there is a new packaging design, a revision to a current design, a change in packaging material, and various other reasons. Testing a new packaging design before full scale manufacturing can save time and money.

2. Laboratory Affiliation

Many suppliers or vendors offer limited material and package testing as a free service to customers. It is common for packagers to partner with reputable suppliers: Many suppliers have certified quality management systems such as ISO 9000 or allow customers to conduct technical and quality audits. Data from testing is commonly shared. There is sometimes a risk that supplier testing may tend to be self-serving and not completely impartial.
Large companies often have their own packaging staff and a package testing and development laboratory. Corporate engineers know their products, manufacturing capabilities, logistics system, and their customers best. Cost reduction of existing products and cost avoidance for new products have been documented.
Another option is to use paid consultants, Independent contractors, and third-party test laboratories. They are commonly chosen for specialized expertise, for access to certain test equipment, for surge projects, or where independent testing is otherwise required. Many have certifications and accreditations: ISO 9000, ISO/IEC 17025, and various governing agencies.

3. Procedures

Several standards organizations publish test methods for package testing. Included are:
International Organization for Standardization, ISO

- ASTM International
- European Committee for Standardization. CEN
- TAPPI
- International Safe Transit Association, etc.

Governments and regulators publish some packaging test methods. There are also many corporate test standards in use. A review of technical literature and patents also provides good options to consider for test procedures.
If a test is conducted with a deviation from a published test method, the test report must fully disclose that deviation.

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4. Materials Testing

The basis of packaging design and performance is the component materials. The physical properties, and sometimes chemical properties, of the materials need to be communicated to packaging engineers to aid in the design process. Suppliers publish data sheets and other technical communications that include the typical or average relevant physical properties and the test method these are based upon. Sometimes these are adequate. Other times, additional material and component testing is required by the packager or supplier to better define certain characteristics.

When a final package design is complete, the specifications for the component materials needs to be communicated to suppliers. Packaging materials testing is often needed to identify the critical material characteristics and engineering tolerances. These are used to prepare and enforce specifications.

For example, shrink film data might include: tensile strength, elongation, Elastic modulus, surface energy, thickness, Moisture vapour transmission rate, Oxygen transmission rate, heat seal strength, heat sealing conditions, heat shrinking conditions, etc. Average and process capability are often provided. The chemical properties related for use as Food contact materials may be necessary.

Thus packaging is very important that why I selected the subject for my minor research is "Survey of Packaging Industries in Chakan MIDS area, Pune (MS)" 2012-13 which is helpful to society, industrialist & Government also.

CONCLUSION

Survey of packaging industries in Chakan MIDC area, Pune (MS) is the rural areas people got employment opportunities and their standard of living increased. The following are summary of it

1. The employment opportunities become available locally.
2. The standard of living increased.
3. Due to employment opportunities people from outstate came. So the local people get additional way of income. People on Rent Basis, Canteen. Saloon, Restaurant, Vegetables, traveling all these business got evolved.
4. To protect the products from any damage, deterioration or spoilage companies established.
5. The differentiate an identify it from the other classes of products is possible to know the original product for rural people.
6. To make the product more sale-able because of packaging.
7. To allow a greater way in easy handling is possible.
8. To give a greater convenience in use to people.
9. To nourish the company brand image in this sector.
10. 80% of the industries provides job opportunities for women locally 100% of the industries provides quality & safety provides to the customers.

It is observe that regarding medicine & food following are the important things are to be as :

1. Food that is in bottles, cans, jars, boxes, containers and packets is packaged. Also, any food that you provide to the customer that is wrapped or covered (eg paper, glad wrap, foil wrap etc) and/or put in a container (eg takeaway container, foil tray, cardboard box etc) and/or put in a bag (eg paper, plastic etc) is packaged. This means any food packaged by you on your premises.

   Under the Food Act 1984, food must meet the requirements of the Food Standards Australia New Zealand (FSANZ) Food Standards Code. One of the things covered by the Code is labeling of food and this generally applies

   to packaged food.

   2. The safe use of all medicines depends on users reading the labeling and packaging carefully and accurately and being able to assimilate and act on the information presented. The primary purpose of medicines labeling and packaging should be the clear unambiguous identification of the medicine and the conditions for its safe use. Common factors affecting all users of medicines may be summarized under three headings:

   INFORMATION : Certain items of information are vital for the safe use of the medicine.

   FORMAT :

   The information must be presented in a legible manner that is easily understood by all those involved in the supply and use of the medicine.

   STYLE :

   There is potential for confusion between both similarity in drug names and similarity in medicines

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packaging.
Medication errors occur due to many factors. “Building a Safer NHS for Patients”(1) published in April 2001, which implemented “Organization With A Memory”(2), identified such factors as training, communication, storage, and supervision. Problems with labeling have also been associated with a high percentage of errors (3). Within the current regulatory framework there is the potential for improving the layout of medicines labeling to aid clarity. This would assist health professionals and patients/carers to select the correct medicine and use it safely, thereby helping to minimise medication errors.
The critical information should appear in as large a font as possible to maximize legibility, on at least one face of the presentation. It should not be broken up or separated by non-critical information Innovative pack design that may incorporate the judicious use of colour is to be encouraged to ensure accurate identification of the medicine. Only positive statements should appear on medicines labeling to avoid ambiguity of the message.
Undertaking a user test to ensure the maximum clarity of the critical information is desirable and recognized as best practice.

6. APPINDEX

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