SAMIKHIYA: A Multidisciplinary Research Journal
ISSN: 2583-827X (Online)
Volume 4, Issue 1 (Special Issue), June 2025 pp.1-18
Available at:
https://journal.mscw.ac.in/mscw_Journal.aspx

Yantra Packs: Towards a Sustainable Future

***Navdeep Kodan, **Dr. Akshat Aditya Rao**

*Research Scholar, Marketing School of Management and Liberal Studies,The NorthCap University,

**Associate Professor, Marketing School of Management and Liberal Studies, The NorthCap University,

Email:

akshataditya@ncuindia.edu

ABSTRACT

This case illustrates the innovative mechanism incorporated by Yantra Packs in the logistics industry oriented towards sustainable business practices. Under these innovative practices, Yantra replaced corrugated boxes with returnable reusable packaging to protect the eco-system and reduce costs. Through this case study we will try to understand how using returnable packaging items can a company reduce its carbon emissions and how using technology solutions such as Radio Frequency Identification (RFID) we can improve identification and tracking solutions and make processes efficient. This case study highlights the solution to four major problems in logistics that increase carbon emissions. Problems created by corrugated boxes, underutilization of resources, idle return load, and loss and theft of returnable packaging items are solved by Yantra Packs through optimal utilization, innovation, and technology. This case study draws a comparison between corrugated boxes and returnable packaging.

Keywords: Sustainability; Packaging; returnable packaging; Yantra packs.

SAMIKHIYA: A Multidisciplinary Research Journal
ISSN: 2583-827X (Online)
Volume 4, Issue 1 (Special Issue), June 2025 pp.1-18
Available at:
https://journal.mscw.ac.in/mscw_Journal.aspx

INTRODUCTION

Packaging helps in information transmission, marketing, safe transportation, and security of the products. Over a period, various materials have been used for packaging, in ancient times (1900-1950) ordinary pages, wooden cages, glass, and metal containers were used. However, these materials had poor shelf life and were largely used for households. In modern times (1950-1990) came coated glass, metal containers, metal foils, plastic, modified paper, and synthetic materials. These were used as they were effective and had improved shelf life, but they were not eco-friendly. Finally, after the 1990s came biopolymer-based packaging and edible packaging which are eco-friendly have improved shelf-life. Packaging adds to the global environmental footprint because the package is discarded after its usage. Because of this environmental impact, it is necessary to adapt to novel and safe technology (Oloyede et al., 2021; Verma et al., 2021). Packaging can be environmentally sustainable if virgin resources are used less in producing packaging material and if the post-consumption material can be recycled or reused. Use and disposal of the material takes up 60% of the total cost of producing packaging (Chirilli et al, 2022). Packaging material, shipping packaging, and pallets are now replaced with returnable-type reusable packaging to protect the eco-system and make it less expensive. Cost can be saved by reducing disposal costs and eradicating one-time-use packaging material (Maleki & Meiser, 2011). Sten Gustaf Thulin, the Swedish engineer created plastic bags. According to his son, paper bags were less sustainable and plastic bags were used as alternative, Paper bags were weak and considered unsustainable as they resulted in deforestation. Plastic bags were strong and could be reused (Weston, 2019). According to Stanford Magazine, the more you reuse plastic, paper, or cotton bags, the more sustainable they become (Thompson, 2017).

Through this case study we will try to understand how using returnable transport items can a company reduce its carbon emissions and how using technology solutions such as Radio Frequency Identification (RIFD) can improve identification and tracking solutions and make processes efficient. It helps in making sustainable choices and increasing turnover.

SAMIKHIYA: A Multidisciplinary Research Journal
ISSN: 2583-827X (Online)
Volume 4, Issue 1 (Special Issue), June 2025 pp.1-18
Available at:
https://journal.mscw.ac.in/mscw_Journal.aspx

TRANSPORT PACKAGING

Functions of packaging can be classified under three categories i.e. marketing, logistics, and environmental. The logistical function helps in distribution, protection of the product, and providing information about conditions and location. The marketing function oversees the graphic design and format of the packaging. The environmental function is responsible for recovering, recycling, and dematerializing the packaging materials. Packaging can also be classified as primary, secondary, or tertiary. Primary packaging is for the interaction of product with the consumer, usually consumer takes this packaging home. Secondary packaging has primary packaging. When primary or secondary packaging is assembled on a pallet or container, it becomes tertiary packaging. Transport packaging is used for conveniently handling, storing, and transporting products (Saghir, 2004). Tertiary packaging effects supply chains and is vital for bulk handling and transportation. It also produces packaging waste. These packaging materials can be collected back for reuse if their condition is good enough (chung et al, 2018). Reverse logistics (RL) facilitates the collection of return products for reusing, recycling, etc. Forward supply chain (FSC) facilitates distribution of products from producers to consumers. RL along with the FSC helps in creating Closed Loop Supply Chain (CLSC). CLSC is the integration of conventional/forward logistics and reverses supply chains. Returnable Transport Items (RTI) such as containers, boxes, pallets, and so on are also known as reusable logistical packaging (Zhang, 2019). The CLSC model is focused on the economic aspect of SC and not the environmental aspect. Returnable Transport Item in CLSC reduces carbon emissions and hence RTI is vital (Sarkar et al, 2017). The most common RTIs that are used are pallets, 80% of the world trade is carried by these pallets. The design structure of the pallets is standardized, which has helped in developing an efficient logistics system. Pallets are reused and environmentally friendly (Tornese et al, 2021). RTI reduces the material waste in the environment and reduces Carbon dioxide emissions in comparison to one-way packaging. RTIs also provide better protection and transportation than disposable packaging (Zhang, 2019). To make any packaging sustainable it is vital to effectively recover the packaging after the end of its useful life, followed by subsequent reuse in industrial or biological cycles. Closed-loop material chains can help companies to achieve this goal of effective recovery at

SAMIKHIYA: A Multidisciplinary Research Journal
ISSN: 2583-827X (Online)
Volume 4, Issue 1 (Special Issue), June 2025 pp.1-18
Available at:
https://journal.mscw.ac.in/mscw_Journal.aspx

the end of the lifecycle which will eventually reduce cost and improve sustainability for any firm. RTI and CLSC together helps in reducing waste in landfills with pooling and standardisation (Maleki & Meiser, 2011). Total energy consumption is one of the ways to calculate environmental and economic costs. The more carbon dioxide is omitted, the less sustainable the method becomes. Single-use packaging containers emit more carbon dioxide than reusable packaging containers. Also, the mass of returnable packaging containers is half the mass of single-use packaging containers which results in lower transportation emissions (Mahmoudi and Parvizomran, 2020).

PROBLEM

Corrugated boxes are used for commodity packaging and transportation. These boxes are sensitive to environmental moisture as it is made of paper. Environmental humidity affects and influences the relevant properties of these boxes such as comprehensive strength (Zhang et al, 2011). Corrugated boxes are biodegradable, they degrade and release CH4 under anaerobic conditions in landfills. Methane emissions from landfills combined with higher packaging weight are less sustainable than reusable plastic packaging (Silva & Molina-Besch, 2023). The problem of underutilization of space is also caused often, which means that the volume of containers exceeds the volume of packaging boxes. Usually, the space gets wasted because there is no standardization in packages, and the volume and weights of the materials also differ. The order made by the customer is also not the same and recalculation may be required at every shipment making space planning a difficult task. And this calculation is done manually which gives rough estimates of the container volume and weight. This also causes an increase in the transportation cost (Lapanan, 2008). Empty trips of trucks can also be categorized under the problem of underutilization. Empty truck trips increase carbon emissions (Islam and Olsen, 2014). Asset visibility is limited in RTIs and hence the management of RTIs becomes difficult. It requires accurate counting and reporting. There is constant problem of breakage, unavailability, and high lost rates of RTIs. These items are vulnerable to theft and misplacement because of their limited visibility (Demir, 2010).

SAMIKHIYA: A Multidisciplinary Research Journal
ISSN: 2583-827X (Online)
Volume 4, Issue 1 (Special Issue), June 2025 pp.1-18
Available at:
https://journal.mscw.ac.in/mscw_Journal.aspx

SUSTAINABILITY

Environment, economy, and equity are three elements or pillars that hold up the concept of sustainability. To achieve sustainability economy must grow, the environment must be protected, and equity must be promoted. The World Commission on Environment and Development states that sustainability is meeting the needs of the present without compromising the ability of future generations to meet their own need (Portney, K.E. 2015). Sustainability first emerged in the late 1970s and 1980s and it was in the 1990s that this term became familiar. Industrialization and humankind have created a disbalance in the ecological environment. Sustainability is a corrective measure to this disbalance and climate change that we must now consider. Climate change is going to be a problem for the rest of the century. Global warming caused due to greenhouse gas emissions has led to the problem of climate change. With the increasing population of the world, the global carbon footprint is also increasing. Overexploitation of resources, increasing pollutants, and human-generated waste have disrupted the environment. 8 million people died in 2018 due to pollution caused by fossil fuels. Exploiting finite resources for economic growth is driving humankind toward catastrophe. Anything that can harm the livelihood of future generations must be rejected. Efforts should be made to rely on renewable resources and create an economy that is green and low carbon (Caradonna, J.L. 2022). If any society wants to be sustainable,

i) it must not rely on critical resources,
ii) it must avoid population growth as it increases consumption,
iii) the rate of usage of renewable resources must be less than or equal to the rate of natural replenishment,
iv) use of non-renewable resources must decline, and the rate of decline must be greater than or equal to the rate of depletion,
v) substances introduced by human activities must not be harmful to the environment.

The aim of sustainability is to be maintained over time (Heinberg and Lerch, 2010). The ideas of sustainability and sustainable development are the outcomes of long debates on using resources, population stresses, and climate change. Countries and organizations across the globe acknowledge the importance of sustainable development and agree to adopt means to

SAMIKHIYA: A Multidisciplinary Research Journal
ISSN: 2583-827X (Online)
Volume 4, Issue 1 (Special Issue), June 2025 pp.1-18
Available at:
https://journal.mscw.ac.in/mscw_Journal.aspx

become sustainable. For instance, 193 UN member states adopted the 17 Sustainable Development Goals (SDGs) in 2015. These 17 goals were the plan of action for achieving the 2030 agenda for sustainable development. Despite this acknowledgment and adoption, the health of the environment continues to decline. It is difficult to understand why the health of the environment is not improving. One possible reason for this is that organizations and corporations are molding the meaning of sustainability on their terms and not on the terms laid down by the government. It seems that the meaning of sustainability and sustainable development is inconsistent and understood differently and hence policies by different corporations are different vaguely fulfilling the terms of being sustainable (Farley and Smith, 2020).

INDUSTRY OVERVIEW

As per Shangliao Sun's report, the size of the Indian logistics market in the year 2022 was around 274 billion US dollars. It is estimated that by 2030 this market will grow to 563 billion dollars. Manufacturing companies nowadays are striving for efficiency and transparency. With industrial Internet of Things otherwise referred to as 'Industry 4.0' allows companies to redefine everything from the way they interact with consumers and how they structure the supply chain. Data integration and analytics are vital for Logistic Service Providers (LSPs). Sustainable supply chains, provide better traceability and predictability along with smart warehousing solutions will become essential. Digital fitness is becoming a must for every logistics business (9). Radio Frequency Identification (RFID) technologies, barcode, and BLE tag technologies are increasing productivity by automation and reducing human error in the logistics business. A few of the challenges in the logistics industry are related to natural disasters, political instability, and health crises (e.g., COVID-19). Such events can lead to delays, increased costs, and inventory issues. A rise in fuel cost can also increase transportation costs which may affect profitability. Nowadays customers seek fast, reliable, and cost-effective deliveries which is a challenge. Integration with new technologies such as IOT, AI, and blockchain is expensive and these technologies come with the risk of data breach and cybersecurity threats. Traffic congestion in urban cities can lead to unnecessary delays and disrupt supply chain management. Returns and product recalls require efficient reverse

SAMIKHIYA: A Multidisciplinary Research Journal
ISSN: 2583-827X (Online)
Volume 4, Issue 1 (Special Issue), June 2025 pp.1-18
Available at:
https://journal.mscw.ac.in/mscw_Journal.aspx

logistics (Thompson, 2023). Adani Ports, Container Corporation of India, Delhivery, and Blue Dart Express are a few of the leading companies in the logistics industry.

BACKGROUND OF THE COMPANY.

Yantraksh Logistics Pvt. Ltd. was started by Vipin Battu in 2018. Vipin did his B.Tech. from Manav Rachna University and MBA from Symbiosis, Pune. Mr. Battu started his career with Vijay Tanks and Vessels building megastructures - Asia's largest cryogenic LNG tanks and then joined Rivigo Logistics' initial team to set up their new business venture Zoom Ops. Yantraksh Logistics initially provided Full Truck Load (FTL) services and supply chain services to its clients. In 2020 Mr. Battu collaborated with Mr. Karan Saharan and launched Yantra Packs. Mr. Saharan is a CA by academics, and he started his career with EY. In 2015 Mr. Saharan launched a last-mile logistics company that pivoted to become DoneThing (an on-demand personal assistant mobile app). It was acquired by OYO, post which he joined them to launch their long-stay business as Director. This new collaboration Yantra Packs was a returnable transport item pooling solution for intermediate use in the industrial supply chain. They researched returnable packaging items and developed a feasible strategy to inculcate returnable packages in the logistics business and save the earth some 52000 plus trees. Yantra Packs eradicated corrugated boxes from their customer's supply chain and have completed some 225000 trips which were cost-effective and sustainable. Yantra Packs offers returnable transport items (RTI) to industrial supply chain users on –

1. Static hire: It Is a service that includes only the right to use asset pools for a pre-defined period.
2. transit hire: It is a service including the right to use and relocate asset pools for pre-defined locations and cycle times.

Yantra Packs has warehouses at different locations across India serving multiple brands such as TATA, Mahindra, Denso, Gabriel, Lumax, Delhivery, Filpcart, Raicam, and others. These firms transport raw materials for the automotive sector. Raw materials include parts for automobiles. Yantra packs help in effective and efficient transportation for the same by providing optimal routes which eventually adds value to the supply chain and renting plastic crates. Their head office is in Gurugram.

SAMIKHIYA: A Multidisciplinary Research Journal
ISSN: 2583-827X (Online)
Volume 4, Issue 1 (Special Issue), June 2025 pp.1-18
Available at:
https://journal.mscw.ac.in/mscw_Journal.aspx

CASE

Returnable Packaging Items over corrugated boxes:

Vipin identified the disadvantages of transporting goods in corrugated boxes. A standard corrugated box generates 4500 grams of GHG. These boxes are used for bulk packaging. These are standard packages used by firms to transport their products to the vendors. After using these boxes, they are dumped into the garbage. Few of the boxes get recycled and others reach huge heaps of waste into the landfills. Corrugated boxes are biodegradable, they degrade and release CH4 under anaerobic conditions in these landfills. Transporting goods using corrugated boxes is less sustainable than returnable packaging. In 2020 Vipin and Karan developed a feasible strategy by bringing returnable packaging into the picture. Returnable packaging is a sustainable, cost-effective solution for businesses looking to reduce their environmental impact. Plastic crates can be used thirty-six times before they become futile and no longer be used whereas a corrugated box is discarded after the material is delivered. When plastic crates become futile, Yantra Packs delivers them to a German firm which then recycles these crates. Using 60% of the virgin plastic along with disposed of crates can be used to make new returnable packaging. If we draw a comparison between using returnable packaging and corrugated boxes, then we will discover that returnable packaging is far more a sustainable and viable option. It helps in improving supply chain efficiency, reduces transportation costs, and enhances brand reputation. The following are the benefits of returnable packaging:

1. Returnable packaging item prevents component damage which may occur in corrugated boxes due to moisture or heavy weight.
2. Corrugated boxes once used are dumped which increases waste in the environment, returnable packaging items are durable and can be used for multiple trips which helps in waste reduction.
3. Returnable packaging items promote absolute and optimal utilization of resources as they require low cubic space which reduces costs and increases profitability.
4. Returnable packaging items are reused multiple times and damaged items can be repaired and recycled which further reduces its carbon footprint.
5. Sustainable and cost-efficient methods increase overall customer satisfaction and further increase the profitability of the firm.

SAMIKHIYA: A Multidisciplinary Research Journal
ISSN: 2583-827X (Online)
Volume 4, Issue 1 (Special Issue), June 2025 pp.1-18
Available at:
https://journal.mscw.ac.in/mscw_Journal.aspx

Reduction in Cycle times through optimal utilization of space:

The second problem that Vipin analyzed was underutilization. Where one cubic meter space inhabited five corrugated boxes, Yantra Packs increased that capacity to 10-15 boxes with the help of returnable packaging items. Figure 1 differentiates the utilization of space between corrugated boxes and foldable plastic boxes which are returnable packaging items. As we can see foldable crates optimally utilize the space in comparison to corrugated boxes and decrease the cost by 36%. It also improves the quality of the supply chain as it avoids any damage. A truck can occupy 220 corrugated boxes, whereas only 22 foldable crates can be inhabited. However, the component pack density per box is higher for foldable plastic boxes than corrugated boxes. In one corrugated box, 6 components can placed whereas foldable plastic boxes can have 90 components. A truck carrying 22 boxes can transport 1320 components, whereas if these boxes are replaced by foldable plastic boxes 1980 components can be transported. The figure draws a comparison between two types of packaging for transporting 3000 components. In the case of corrugated boxes transporting 3000 items in a month will need 2.27 trucks and foldable crates will only need 1.52 trucks. This alone will create a differentiation of 33605 rupees. Foldable plastic boxes optimally have utilised the space and reduced the cycle time which has reduced the cost of transportation. Reduction in cycle time also saves fuel costs and makes foldable plastic boxes more sustainable than corrugated boxes. If we further compare the cost of buying corrugated boxes and renting plastic boxes for the same number of components, then foldable plastic boxes are a bit more expensive than the boxes. But adding further the cost of damage and the cost of labor to transportation cost and packaging cost we can see that transporting components in corrugated boxes is far more expensive and a supplier will save 36% of the total cost if foldable plastic boxes are used. The number of laborers required for component handling is less in the case of returnable packaging and components are safer which also reduces the cost of damage. The combination of all these costs has made returnable packaging a far better, safer, cheaper, sustainable, and efficient way of transporting components.

SAMIKHIYA: A Multidisciplinary Research Journal
ISSN: 2583-827X (Online)
Volume 4, Issue 1 (Special Issue), June 2025 pp.1-18
Available at:
https://journal.mscw.ac.in/mscw_Journal.aspx

	Corrugated Box	FLC
Carrying capacity per truck	220	22
Component pack density per box	6	90
No. of components per truck	220 x 6 = 1320	22 x 90 = 1980
No. of trucks required to transport 3000 components per month	3000 / 1320 = 2.27	3000 / 1980 = 1.52
Cost of transportation Manesar to Pune in 20 ft truck	45000	45000
Total Transportation Cost (A)	**45000 x 2.27 = 102150**	45000 x 1.52 = 68500
Cost per box	25 (Buy)	1500 (Rent)
Total Packaging Cost (B)	220 x 2.27 x 25 = 12485	**22 x 0.45 x 1500 = 14850**
% of damage in-transit	0.50%	-
No. of components damaged per month	3000 x 0.5% = 15	-
Cost of re-making damaged components	15 x 600 = 9000	-
Cost of transporting damaged components	15 x 35 x 2 = 1050	-
Cost of packaging damaged components	15 x 25 / 6 = 62.5	-
Total cost of damaged components (C)	**9000 + 1050 + 62.5 = 10112.5**	-
No. of labour required for material handling	2	1
Labour salary per month	12500	12500
Cost of labour required (D)	**25000**	12500
Total cost (A+B+C+D)	1,49,747.5	**95,750.0**
Total cost per component	**49.9**	31.9
Savings per component	18.00	
Savings %	36%	

FLC - Foldable Large Container with dimensions of 1200*800*1000 mm

Figure 1. Comparison between corrugated boxes and FLC. Source: Yantra Packs pitch deck.

Pooling to solve the problem of idle return load:

The third problem that Yantra solved was idle return load. Vipin calls this solution an outcome of their network and hard work. A report from the Office of Energy Efficiency revealed that 39% of the study's participant fleet vehicles idled three to four hours every day. And this problem combined with idle return load becomes more expensive. Considering the high fuel cost of trucks, it is significant to solve this problem of idle load return. Yantra Packs solved this problem by pooling. To understand what pooling is, let us understand the Transit hire model of Yantra packs which is represented in Figure 2. Yantra Packs has a warehouse in Gurugram, Lunax's component manufacturing plant in Gurugram wants to send supplies to Tata in Pune and hence it requests Yantra for returnable packaging items such as foldable crates, foldable containers, etc. Yantra sends packaging items to Lunax, and Lunax sends material using returnable packaging items to Tata, the Original Equipment Manufacturer (OEM) plant in Pune. Once the material is unloaded at Tata, Yantra Packs collects the packaging items from the OEM plant in Pune and transports them to their warehouse in Pune until further use. Now when Gabriel, the other component manufacturing plant in Pune requests for packaging items, Yantra Packs transport them from their Pune warehouse. Gabriel then sends material to their plant in Gurugram for further processing and supply to nearby OEMs. Packaging items are then

SAMIKHIYA: A Multidisciplinary Research Journal
ISSN: 2583-827X (Online)
Volume 4, Issue 1 (Special Issue), June 2025 pp.1-18
Available at:
https://journal.mscw.ac.in/mscw_Journal.aspx

collected by Yantra Packs from Gabriel's Gurugram plant to their warehouse in Gurugram. The packages are customized, repaired, and reconditioned in the warehouses. This is how pooling works; it makes sure that empty packaging doesn't get transported as this increases company cost and reduces profitability. Yantra Packs achieved this through networking, like in the above case Yantra Packs have clients both in Pune and Gurugram who intend to transfer goods from Gurugram to Pune and from Pune to Gurugram. Yantra Packs makes use of AI to ensure optimal utilization of packaging items and other resources. AI model helps in ascertaining the best feasible plan for transporting material. It reduces underutilization of resources which saves cost and makes this cycle sustainable. The following are the benefits of pooling:

1. Pooling is sustainable and saves money as it nullifies idle return load. It minimizes the transportation of empty packaging.
2. Companies don't have to buy packaging items or pay for waste management, recycling, or maintenance. It reduces overall cost and pooling helps in converting capital expenditure to operational expenditure for the companies.
3. Pooling makes sure that packaging items are available and ready when and where they are needed.

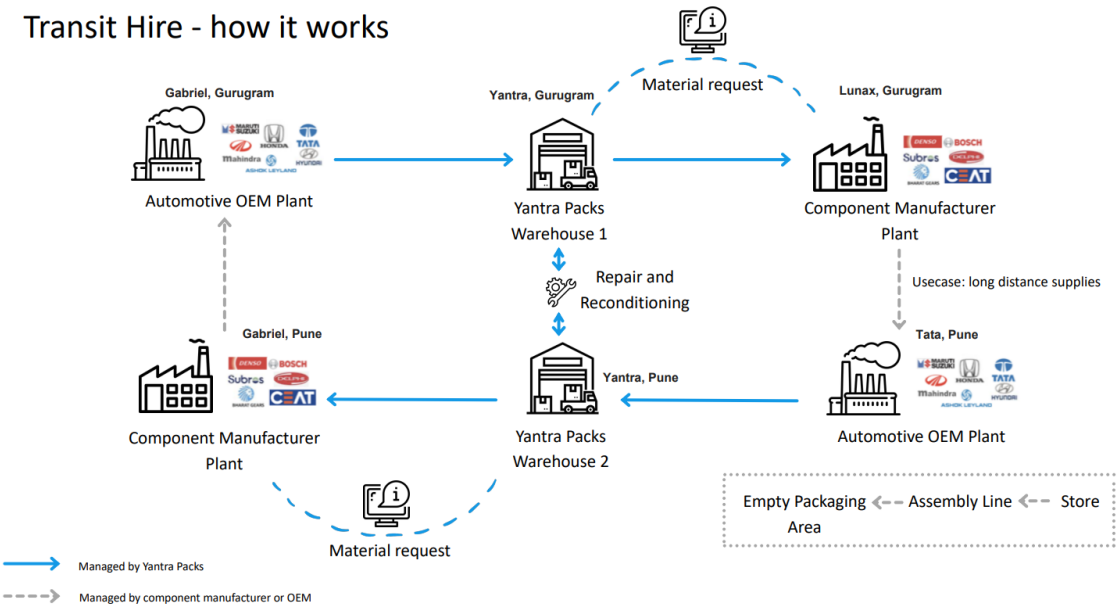

Figure 2. Working on transit hire model of Yantra packs. Source: Yantra Packs pitch deck.

SAMIKHIYA: A Multidisciplinary Research Journal
ISSN: 2583-827X (Online)
Volume 4, Issue 1 (Special Issue), June 2025 pp.1-18
Available at:
https://journal.mscw.ac.in/mscw_Journal.aspx

RFID to prevent loss and promote optimal utilization

Returnable packaging is sustainable if it is being reused by the company. It must be repaired timely and once the life cycle of the returnable packaging item ends; it must be recycled. In case of theft or loss of the packaging items, it becomes difficult to maintain sustainability or profitability. To tackle this problem of loss and theft Yantra Packs is taking the help of AI and IoT devices like Radio Frequency Identification (RFID) technology. There are two types of tags that RFID technology offers: Active and Passive. Yantra Packs makes use of passive RFID technology. The tag is made up of an antenna coil and an electronic chip. These tags are placed on every packaging item. The electric power for transmitting signals is driven by time-varying radio frequency waves generated by the reader. Radiofrequency creates AC voltage when it passes the antenna coil. After this, the tag gets a power supply which transmits information back to the reader which further helps in the identification of the tag which is placed on every packaging item. Vipin's Yantra Packs is a pioneer in leveraging a combination of these technologies in the logistics industry in India. The following are the benefits of passive RFID technology:

1. Theft and loss of packaging items are prevented as tags on the packaging items are automatically scanned. It is easy to keep track of the items, in case of missing items, the concerned authorities are immediately informed automatically by the system itself.
2. Automatically scanning items reduces labor costs, saves time, and avoids errors.
3. Passive RFID tags are lighter and cheaper than active RFID and Wi-Fi technologies.
4. Tags can be read without a line of sight.

DISCUSSION

Rupi Kaur in her book "The Sun and Her Flowers" says "I find it deeply important to accept that we are not the masters of this place. We are her visitors, and like guests let's enjoy this place like a garden. Let us treat it with gentle hands, so the ones after us can experience it too." Poetically and beautifully Kaur is asking us to be sustainable. In every field today across the world people are encouraging and promoting sustainable practices. From clothing to housing, from consumption to disposal sustainability can be practiced in every segment and it must be

SAMIKHIYA: A Multidisciplinary Research Journal
ISSN: 2583-827X (Online)
Volume 4, Issue 1 (Special Issue), June 2025 pp.1-18
Available at:
https://journal.mscw.ac.in/mscw_Journal.aspx

practiced. It is the need of the hour. In recent years global warming and climate change have created a noticeable impact on our environment. The average temperature of the globe is alarmingly rising. Scientists have predicted that Asia will receive a maximum number of heat waves in the coming years. Increasing pollution, population, and urbanization have disrupted ecological balance. Plastic waste, industrial waste, and commercial fishing have disrupted marine life. If humans continue these practices, it is believed marine life cannot survive beyond 2050 and if that happens humans too cannot survive. It is important to address this issue and promote sustainable development across all corporates, agencies, and governments. Yantra Packs is one firm that is promoting sustainable development and working towards reducing carbon footprint. Yantra Packs are creating awareness and encouraging firms to switch to sustainable methods of transporting products. They have helped companies in achieving sustainable goals and increase their profitability simultaneously. Yantra Packs provide returnable packaging items instead of corrugated boxes. Corrugated boxes are biodegradable, they degrade and release CH4 under anaerobic conditions in landfills. Returnable packaging is far more sustainable than corrugated boxes. Yantra Packs has saved more than 52000 trees by eradicating corrugated boxes from the supply chain. Another issue in the logistics business was related to idle return load. Considering the high fuel cost of trucks, it is significant to solve this problem of idle return load. Transporting materials from point A to point B is not challenging but once at point B the material is unloaded, the transport is empty and the movement of vehicles beyond that point is both costly and unsustainable. Yantra packs solved this issue with the help of pooling. Where one cubic meter space inhabited five corrugated boxes, Yantra Packs increased that capacity to 10-15 boxes with the help of returnable packaging items. This causes underutilization of resources which increases cycle time and fuel cost. Returnable packaging solves this problem as well and reduces the cycle time which saves fuel and saves unnecessary costs which makes it more sustainable. Finally, the problem of loss and theft of returnable packaging items was solved by Yantra Packs in their warehouses. Yantra Packs used modern Radio Frequency Distribution technology to solve this problem. Passive RFID technology is used to keep track of returnable packaging items in case an item does not reach the warehouse in the given time, rightful authorities are notified. Packaging items have a light tag placed on them, which helps in identifying and tracking. Yantra Pack is a Returnable transport item

SAMIKHIYA: A Multidisciplinary Research Journal
ISSN: 2583-827X (Online)
Volume 4, Issue 1 (Special Issue), June 2025 pp.1-18
Available at:
https://journal.mscw.ac.in/mscw_Journal.aspx

pooling solution for intermediate use in the industrial supply chain. Once the packaging item becomes obsolete, Yantra Packs delivers it to a firm based in Germany that recycles these items. Yantra makes sure that none of their packaging items go into the trash which increases environmental waste. Overall problems created by corrugated boxes, underutilization of resources, idle return load, and loss and theft of returnable packaging items are solved by Yantra Packs through optimal utilization, innovation, and technology. We must reduce our carbon footprint, not for us but for future generations. Sustainable housing, reducing food waste, avoiding fast fashion, sustainable packaging, and reusing, and recycling resources are a few of many ways which can reduce your carbon footprint. Yantra packs are a good example that tells you how innovation, research, and willingness can reduce carbon emissions and reduce costs.

DISCUSSION QUESTIONS

1. How important is it to have sustainable business practices across industries?
2. India considers climate change as the biggest issue for businesses. What impact can unsustainability have on businesses?
3. Discuss some of the challenges that social entrepreneurs can face in starting their ventures.
4. How can we change the general stigma that sustainability is expensive?
5. Creativity and risk-taking abilities are important for social entrepreneurs. Explain with the reference to the case.

REFERENCES

Oloyede, Omolade O., and Spyridon Lignou. 2021. "Sustainable paper-based packaging: A consumer's perspective." *Foods* 10(5): 1035.

Verma, M. K., S. Shakya, P. Kumar, J. Madhavi, J. Murugaiyan, and M. V. R. Rao. 2021. "Trends in packaging material for food products: Historical background, current scenario, and prospects." *Journal of Food Science and Technology*: 1–14.

Chirilli, Claudia, Marco Molino, and Laura Torri. 2022. "Consumers' awareness, behavior and expectations for food packaging environmental sustainability: Influence of socio-demographic characteristics." *Foods* 11(16): 2388.

SAMIKHIYA: A Multidisciplinary Research Journal
ISSN: 2583-827X (Online)
Volume 4, Issue 1 (Special Issue), June 2025 pp.1-18
Available at:
https://journal.mscw.ac.in/mscw_Journal.aspx

Maleki, Ramin A., and Gunther Meiser. 2011. "Managing returnable containers logistics case study part: Improving visibility through using automatic identification technologies." *International Journal of Engineering Business Management* 3(2): 45–54.

Weston, Phoebe. 2019. "Plastic bags were created to save the planet, inventor's son says." *Independent*, October 17. https://www.independent.co.uk/climate-change/news/plastic-bags-pollution-paper-cotton-tote-bags-environment-a9159731.html.

Thompson, Craig. 2017. "Paper, plastic or reusable? The answer is a mixed bag." *Stanford Magazine*, September. https://stanfordmag.org/contents/paper-plastic-or-reusable.

Zhang, Y. L., J. Chen, and Y. Wu. 2011. "Analysis of hazard factors of the use of corrugated cartons in packaging low-temperature yogurt during logistics." *Procedia Environmental Sciences* 10: 968–973.

Silva, Natalia, and Karin Molina-Besch. 2023. "Replacing plastic with corrugated cardboard: A carbon footprint analysis of disposable packaging in a B2B global supply chain—A case study." *Resources, Conservation and Recycling* 191: 106871.

TAWI. 2023. "Logistics trends for 2023: The top 5 trends in logistics." https://www.tawi.com/insights/logistics-trends-for-2023-the-top-5-trends-in-logistics/.

Thompson, Sarah. 2023. "7 top logistics industry challenges for 2023." *Pallet Market, Inc.*, January 13. https://www.palletmarketinc.com/blog/7-top-logistics-industry-challenges-for-2023.

Portney, Kent E. 2015. *Sustainability*. Cambridge, MA: MIT Press.

Caradonna, Jeremy L. 2022. *Sustainability: A History*. Oxford: Oxford University Press.

Heinberg, Richard, and Daniel Lerch. 2010. "What is sustainability?" *The Post Carbon Reader* 11: 19.

Farley, Heather M., and Zachary A. Smith. 2020. *Sustainability: If It's Everything, Is It Nothing?* New York: Routledge.

Barbier, Edward, and Jennifer Burgess. 2017. "The sustainable development goals and the systems approach to sustainability." *Economics* 11(1): 20170028. https://doi.org/10.5018/economics-ejournal.ja.2017-28.

Holzwarth, S. 2015. *Analysis of the Transport Relevance of Each of the 17 SDGs*. United Nations.

Saghir, Mustafa. 2004. "The concept of packaging logistics." In *Proceedings of the Fifteenth Annual POMS Conference, Cancun, April*, 1–31.

SAMIKHIYA: A Multidisciplinary Research Journal
ISSN: 2583-827X (Online)
Volume 4, Issue 1 (Special Issue), June 2025 pp.1-18
Available at:
https://journal.mscw.ac.in/mscw_Journal.aspx

Sarkar, Biswajit, Md Ullah, and Namjin Kim. 2017. "Environmental and economic assessment of closed-loop supply chain with remanufacturing and returnable transport items." *Computers & Industrial Engineering* 111: 148–163.

Tornese, Francesco, Maria G. Gnoni, Brandon K. Thorn, Adam L. Carrano, and Jeffrey A. Pazour. 2021. "Management and logistics of returnable transport items: A review analysis on the pallet supply chain." *Sustainability* 13(22): 12747.

Mahmoudi, Mohsen, and Iman Parviziomran. 2020. "Reusable packaging in supply chains: A review of environmental and economic impacts, logistics system designs, and operations management." *International Journal of Production Economics* 228: 107730.

Zhang, Y. 2019. *Optimization of Closed-Loop Food Supply Chain with Returnable Transport Items*. Doctoral diss., Université Paris-Saclay; Northwestern Polytechnical University, Xi'an (China).

Chung, Shan-Ho, Hung-Lin Ma, and Hing Kai Chan. 2018. "Maximizing recyclability and reuse of tertiary packaging in production and distribution network." *Resources, Conservation and Recycling* 128: 259–266.

Lapanan, B. 2008. *Optimization of Container Utilization: A Case Study of the ABC Company*.

Islam, Shahin, and Thomas Olsen. 2014. "Truck-sharing challenges for hinterland trucking companies: A case of the empty container truck trips problem." *Business Process Management Journal* 20(2): 290–334.

Demir, Atilla. 2010. *The Value of Radio Frequency Identification Technology for Managing Pools of Returnable Transport Items*. Master's thesis, Middle East Technical University.

SAMIKHIYA: A Multidisciplinary Research Journal
ISSN: 2583-827X (Online)
Volume 4, Issue 1 (Special Issue), June 2025 pp.1-18
Available at:
https://journal.mscw.ac.in/mscw_Journal.aspx

Exhibit-1







SAMIKHIYA: A Multidisciplinary Research Journal
ISSN: 2583-827X (Online)
Volume 4, Issue 1 (Special Issue), June 2025 pp.1-18
Available at:
https://journal.mscw.ac.in/mscw_Journal.aspx

Exhibit- 2