



SCM & LOGISTICS IN E-COMMERCE



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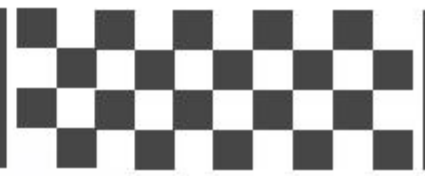
“Some people dream of success, while other people get up every morning and make it happen.” - Wayne Huizenga

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Articles received for our Magazine from across India

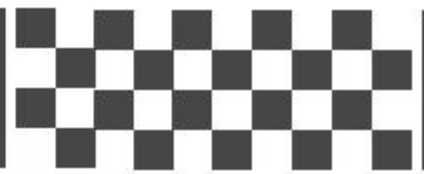
**And now we are expanding
Internationally
as well.....**



KJ Somaiya Institute of Management Studies and Research is known for its ability to produce excellent managers and leaders in various fields year after year. This comes not only from a robust academic curriculum and faculty expertise but also from student driven initiatives. FORSE, the operations committee is spearheading such initiatives in the field of operations to help students develop understanding in this field. Momentum is one such initiative that has been taken by our students to enrich that learning. The magazine is an attempt to engage readers' on state of the art trends in field of Operations and Supply Chain Management.

My Heartiest congratulations to the team on bringing out this initiative of momentum. I hope that the readers will enjoy this seventh issue and supplement their knowledge and learning.

Dr. J S Lamba
Faculty In-charge - FORSE
Area Chairperson (Operations)
KJ SIMSR, Mumbai



Dear Readers,

“Either write something worth reading or do something worth writing.” - Benjamin Franklin

We are delighted to bring to you the Annual edition of Momentum. Through this quarterly magazine, we don't only share knowledge but also provide platform to share your knowledge as we believe that knowledge is power. We all are aware that E-commerce is booming and is expected to see faster sales growth in the future. So considering the growing importance of e-commerce globally and to share insights of e-commerce through our magazine, we are presenting this edition with a theme - “SCM & Logistics in E-commerce”.

We at FORSE, believe in continuous learning and improvement as it helps in constant expansion of skills. This cultural philosophy also reflects in our magazine. The structure of our magazine is such that it will give you detailed insights of the theme and add value to you. Our magazine has various enriching sections such as Recent Trends, Overview, Various Articles, Start-ups Stories, Brain Teasers and many more.

The articles that are included in this edition provide good insights into various topics related to e-commerce like Reverse logistics, Sustainable supply chain, Impact of social media in SCM, Usage of drones and various technological advancements such as Blockchain, AI & IoT in e-commerce.

Last but not the least, we would like to thank everyone who has contributed to the magazine and wish for enthusiastic participation in the future as well. We hope you have a great experience reading this edition of Momentum. We also hope that we could provide a platform through this magazine to share and gain knowledge leaving you with a richer knowledge base to cherish and apply in various aspects of your career.

Happy Learning,

Team Momentum



Dear Readers,

We at FORSE (Forum of Operations Research & Supply Chain Enthusiasts), since our inception have been striving for excellence & building business acumen of students in SIMSR by not only organising simulation events, case study competition, international conference, magazines but also by executing campaigns, posts through social media handles thereby utilising the digital media space to communicate the very fabric of supply chain, operations strategy and *logistics* with all the operations enthusiasts across different geographies.

MOMENTUM our quarterly magazine is an attempt to bring forward enlightening topics and concepts in the field of operations, supply chain and logistics to our readers. It contains articles based on different themes in each issue. Since its inception, Momentum has covered many topics under various themes including but not limited to Green Logistics and Smart Supply chain, Technology Driven Supply Chain, Rise of Service Operations in India, Industry 4.0 and many more.

These days we see lots of turbulence in Indian E-commerce sector after various events happening one after other like unveiling of India's second draft of "E-commerce Policy", New FDI rules kicked in on 1st Feb, 2019, few large Indian Businesses showing their willingness to enter in to E-commerce Business, etc. Under such scenario we felt that it's important for any operation enthusiast to understand while there is so much turbulence & noise in frontend, what's happening in the backend. How various technologies are bringing tectonic shift in operations & supply chains of ecommerce Industry to provide their customers seamless experience of same day delivery, efficient reverse logistics to have good return policy and many more experiences & initiatives lined up.

Through the March 2019 Annual Edition of Momentum which revolves around the theme "SCM & Logistics in E-commerce", we strive to enhance the knowledge of our readers on various aspects of E-commerce industry ranging from Reverse Logistics to how various technologies are affecting the operations of e-commerce.

On behalf of the FORSE Momentum Team, who has worked meticulously to bring this issue to you, we hope that the magazine gives you great insights and aggrandize your knowledge bank. Stay tuned for upcoming issues with more interesting themes.

Keep Learning!

Hardik Maniar
Convener

Ajay Yadav
Co-convener

Ronak Pandya
Co-convener



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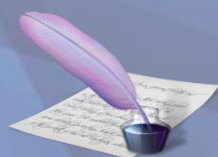
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Emerging technologies, shifting in consumer needs and increasing pressures from existing leaders and new entrants have brought immense shift in supply chain management. The rise of innovations has led customers to expect fast, inexpensive and high-quality delivery at their door steps. Market leaders like Amazon have revolutionized the logistics space, forcing other companies to upgrade their supply chains to compete. With these transformative changes one question arises: How would logistics giants respond or adapt to the need for innovation and evolve their businesses in 2019 and beyond?

In 2019, technology is the only driving function .

- **Blockchain:** The use of blockchain technology, helps industry players to efficiently track all types of transactions safely and securely. It ensures complete transparency of logistics operations throughout the entire process, until the goods are

delivered. Moving into 2019, there would be more companies adopting blockchain technology.

- **AI & IOT:** For many retailers, spreadsheets are still a primary tool for managing data. Implementation of AI would make sense of this data, predicting customer demand, product forecast, optimizing delivery routes and personalize communication with customers. Retailers such as Amazon and REI are making huge investments in AI-driven technologies.
- **Hyper-localisation (On Demand Logistics):** For consumers, same day delivery is convenient, but it requires significant planning and resources to manage a supply chain that is so responsive. In some cases retailers needs to share warehouse spaces with larger distribution centres in order to manage the responsiveness as with increasing purchasing power consumers are ready to pay extra for immediate delivery.





- **Hyper-personalization:** There has been a basic implementation of chat bots at several instances in 2018. But the challenge is how to personalize the experience. 80% of customers stick to a brand because they have managed to create personalised experiences. Pushing the limits of AI bots with hyper-personalisation will be an interesting trend of 2019.
- **Optimised reverse logistics:** It is interesting to note that as much as 30% of all orders placed online are returned compared to only 9% when purchased from brick-and-mortar shops. Reducing the returns can not only save logistics costs but also help manage inventory better and increase an organization's ability to retain customers. Also, businesses can align supplier and carrier data of a returned product with a reason behind the return.
- **Agility & collaboration:** The ability to

react to sudden changes in the SCM will become more and more important, as companies stuck in their ways will find it harder to maintain profits if they can't keep up with trends. Example of Most Fashion retails Vs ZARA. Companies will need to collaborate to optimize their supplier chains thus saving money and time, whether it be space in a warehouse or truck, or in a delivery system. *"It is not about improving the accuracy of the forecast and reducing the amount of uncertainty in the future, it is about eliminating the need for certainty."* – Ronald W. Bohl, Senior director of supply chain at Eli Lilly (American pharmaceutical company with an excellent SCM). Supply chain management means meeting customer demands that is both profitable and sustainable. 2018 saw advent of technologies and 2019 needs to be a Year of Action where these technologies would be tested to their highest potential.

Why Personalization Is Imperative

59%

of shoppers say that personalization influences their purchase decision.

(Source: Infosys)

65%

of consumers are more likely to shop at a retailer that knows their purchase history

(Source: Accenture)

17.6%

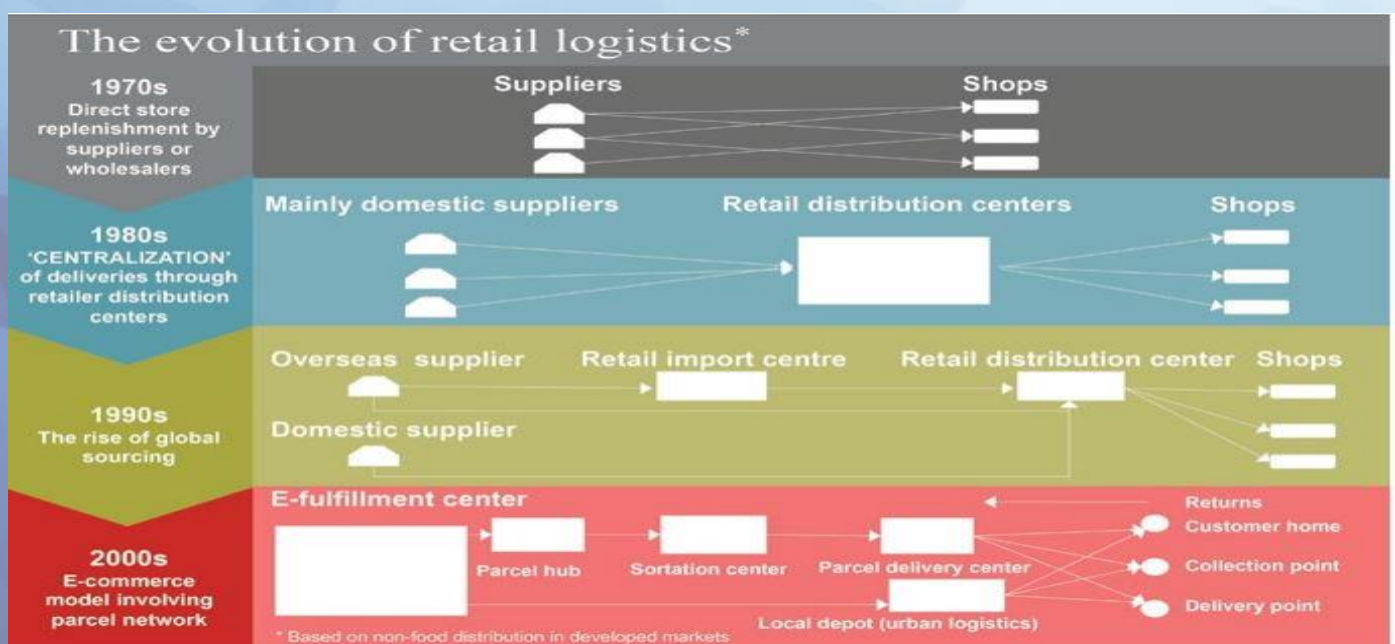
open rate for personalized emails as compared to 11.4% for non-personalized emails (Source: Statista)

SCM & Logistics in E-commerce : An Overview



With increasing acceptance and availability of telecommunication devices and internet services, more and more businesses coming to light with online platforms and a shift in the consumer buying preference from traditional to online methods, providing higher variety, discounts and ease of transaction, the e-commerce market has been growing at an unprecedented rate globally. According to reports, it is anticipated that global retail e-commerce sales will grow from \$1.3 trillion in 2014 to \$4.9 trillion in 2021, representing a nearly threefold growth. But have you ever wondered exactly how the back-end operations occur? How is the product, which is sitting idle in the inventory at a Warehouse located thousands of miles away, shipped to your doorstep possibly on the same day? You guessed it right, the answer lies in the SCM and Logistics management of these online businesses, to provide you with the right product at the right place and right time in good condition.

Let's have a look at how retail logistics have evolved over the decades. The direct delivery model of 1970's was revamped by the concept of centralization, established in 1980's leading to consolidation of deliveries and hence saving in overall transportation costs. 1990's saw the rise of global sourcing due to globalization and easing of trade barriers internationally. Then came the era of e-commerce, which saw the emergence of large e-fulfillment centers which assemble individual orders that are shipped through parcel services. These parcels are moved to parcel hubs that consolidate shipments or to sortation centers that arrange shipments by their regional/local destinations. The parcels will then reach a delivery center where they will be placed on specific local delivery routes to the last mile which may be either the residence of the customer, a collection point (such as an urban freight station or an urban pickup location) or a delivery point such as postal box or even the lobby of a building.





The leading factor in designing and planning your SCM and logistics model in e-commerce is the strategy one wants to follow and then linking it to the appropriate model. For this one need to ask questions like will you be trading with self-manufactured items or re-selling them, working as a platform? How much inventory will you keep? Will you go for a cost-leadership model or a differentiation model? What duration of lead time will you be providing the customers? The product/service being sold along with your strategy will have a great influence on your choice of SCM model: Lean, Flexible, Agile or Responsive.

As e-commerce deliveries are usually high in volumes and small in sizes, Third or Fourth party Logistics Service Providers (LSP) are used to consolidate orders. By this method, multiple deliveries are achieved at lower transportation costs, due to efficiencies of scale and increase in the truck load utilization of the carrier. They can also help navigate the best route for transportation of products from a warehouse or storefront to the customer along with managing freight claims, invoicing, insurance processes, or negotiating carrier rates.

Item	Lean SC	Flexible SC	Responsive SC	Agile SC
Typical Products	Grocery, basic apparel, food, oil and gas	Hydro-electric power, some food produce	Fashion apparel, computers, pop music	Telecom, high-end computers, semiconductors
Demand	Predictable	Predictable	Volatile	Volatile
Variety of Products	Low	Low	High	High
Product Life Cycle	Long	Long	Short	Short
Customer Drivers	Cost and Quality	Cost and Quality	Availability	Availability
Profit Margin	Low	Low	High	High
Dominant Costs	Physical Costs	Physical Costs	Marketing Costs	Marketing Costs
Supply Uncertainty	Low	High	Low	High



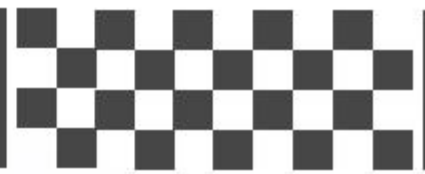


Advantages	Disadvantages
Cost reduction	Loss of control over the logistics function
Improved efficiency, service and flexibility	Impact on in-house workforce
Focus on core competency	More distance from clients- loss of personal touch
Freeing up resources	Discontinuity of services of a 3PL provider
Elimination of infrastructure resources	Differences of opinion or perception of the service level of the 3PL provider
Risk- sharing	
Better cash flow	
Access to resources not available at one's own organization	

The table above summarizes the advantages and disadvantages of using 3rd party and 4th party LSP's in e-commerce. However these aren't the only challenges that one has to face in SCM and logistics management. Collaboration of the parties in e-commerce, last mile timely delivery and increased transparency of the supply chain also demand high investment and utilization of high-end technologies which are becoming industry norms today. Internet of Things and GPS tracking are core to the real time position tracking which you are glued to as soon as you place an order. The communication between online platform provider, the manufacturer and the logistics provider too needs to be real time to facilitate timely delivery and inventory control. For this purpose, EDI or Electronic Data Interchange is the most commonly used technology. EDI helps in quick time computer-to-computer exchange of

business documents, such as purchase orders and invoices, in an electronic format between the business parties.

As if all these challenges and innovations weren't already enough, some online market places are also incorporating the use of their own drone services in logistics of low weight, small distance deliveries. Amazon is one such example which has developed its drone service called Amazon Prime Air, to deliver packages safely to its customers in 30 mins or less. Reduction in delivery time isn't the only advantage of drones, they also reduce the overall energy consumption and carbon footprints in the environment. Drones are the new buzz in e-commerce logistics and have a promising future in coming years, however they will have to wait and combat the challenges of air-traffic control and government policies that are currently inhibiting their commercial usage.



- Shardul Dudhane

K J Somaiya Institute of Management Studies and Research

After responding to various customer enquiries and solving their problems I got tired. I took a much needed refreshment break and returned back to my desk after having a rejuvenating cup of espresso. The phone rang again and here we go, we had the first caller after the break.



The caller seemed frustrated and helpless as she shouted in desperation through the other end of the receiver. “Why me?” she asked. I tried to calm her down but she was not going to. She told me that she had ordered a *rakhi* for her beloved brother and the *rakhi* had not reached in time. After all nobody wears a *rakhi* after the occasion. Unlike most customers she hadn’t called up to elicit refund or complain against monetary damages.

She had called up to complain against the personal loss and humiliation which she felt after she could not receive the *rakhi*

which she had ordered after she had spent a week on selecting the best possible *rakhi*. What would her brother think of her? Who was the real culprit behind this? I felt helpless, I could not do much. The only thing that I could offer her was sympathy and refund which was irrelevant in this case.

This instance helps us to understand the importance of logistics and Supply Chain Management in today’s world especially for e-commerce business. You may have the best products on your platform at the best possible prices that a customer can get but if you cannot deliver those products on time with minimum or no damage, there is not much value left. The service aspect of this is closely linked to the quality of logistic service which enables e-commerce platforms to provide place and time value to the products.

The reputation of any e-commerce firm relies on the fact that it really does in fact delivers according to its promise which brings a sense of reliability and trust within the customers. Although many e-commerce firms, like Amazon have their own logistics services like Amazon Transportation Services (ATS), it is difficult to manage, assort and deliver to lakhs of customers across the country. This causes e-commerce firms to depend heavily on Third Party Logistic (3PL) services for fulfilling orders. So they have to tie up



with various third party logistics services like Blue-Dart, Gati, Fed-Ex, Delhi-very, Indian Postal Service (IPS), etc to get the job done. Hence, they rely on 3PL service to reach their customers.

You might think choosing 3PL services is easy; just find the ones which have the greatest reach and the least cost. But wait, there is more to it. They must also have reliability and must have the same goals aligned with the goals of the e-commerce firms. They must also have alternate mechanisms to cope up with disruptions in Supply Chain in quick time. Also we must look whether the 3PL service can be flexible enough to the changing demand of products.

E-commerce firms must also consider the portfolio of various 3PL services for their operations as all 3PL services are not similar and not all customers have the same demands.

For example, a customer in a village near Manipur does not consider speed of delivery to be the most important factor but is more thoughtful whether the e-commerce platform can reach him through their distributors with minimum damage to product and at the least cost. On the other hand someone in Madhya Pradesh has subscribed to monthly order of medicines which has to reach him on say 1st of every month. Such a kind of delivery has utmost importance to time as medicine is a critical to the health of the

patient and hence reliability in terms of speed of delivery becomes essential and cost of delivery loses its relative importance.

For the first case, Indian Postal Services can do the job for the customer however in the second case a Fed-Ex or Gati becomes necessary. So it is necessary for any E-commerce platform to have a mix of 3PL services at their disposal to cater to various customers. The customer doesn't care if he had received the order from Blue-Dart or IPS all he can see on the packaging is Amazon or Flipkart. Hence the reputation of the e-commerce firm is in the hands of 3PL services. Therefore choosing the right 3PL services is extremely important from the business point of view.

3PL service is not only responsible for logistics purpose but also for reverse logistics function. When a customer receives a faulty product, not all is lost. The e-commerce platform can assure the customer that his money is safe although some time will be lost in the replacement process. For example, a customer who has received a faulty watch has placed a pickup order. However the allotted 3PL does not make the pickup stating that the customer's area is not under their area of operations. The customers can feel frustrated and cheated if the 3PL services are not prompt enough to pick up the return package in time and deliver the replacement order in time.



Mr. Warren Buffet said, “It takes 20 years to build a reputation and only 5 minutes to ruin it”. On similar lines there is a saying in e-commerce business, “It takes years to build trust in customers and only seconds to lose them.” One bad service can burn the bridges of trust and one such dissatisfaction to customer not only separates one customer from the e-commerce firm but he also spreads negative word of mouth to others and this can spread like a fire causing huge losses to the e-commerce firm. Such is the critical nature of logistics in today’s

dynamic world. One bad service experience and game over.

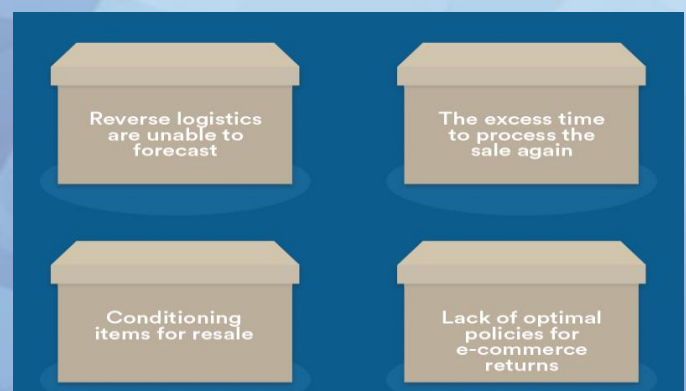




Reverse logistics in online business alludes to the arrival procedure. The way toward moving products from their purpose of utilization back to their purpose of cause generally happens for two reasons: transfer or recovering quality. This procedure can get muddled very rapidly, which makes it significantly progressively imperative for organizations to improve their arrival procedure. A major piece of keeping clients fulfilled is making the buy and return process simple, with the goal that they're bound to be a recurrent client. So as to make their arrival procedure as problem free as would be prudent, an ever-increasing number of organizations are employing outsider organizations to deal with their switch internet business administrations. Reverse logistics can take help and make your arrival procedure as smooth as could be expected under the circumstances, which will make business less demanding for you, and keep clients returning over and over.

Reverse logistics have a high significance in client maintenance, Strategy making,

ROI and investor esteem. Steadfast shoppers have a lot higher incentive than one-time clients, so it's essential to keep them returning and making an issue free return process is one approach to achieve this. People will be bound to pick your organization versus rivals when you offer the wellbeing net of having the capacity to return items without a lot of a whine. Moreover, a simple returns procedure can pull in considerably increasingly new clients. While many are acclimated with making buys on the web, people will, in general, be increasingly reluctant when making a buy from an online retailer they haven't completed an exchange with previously. Publicizing a straightforward return procedure can urge first-time purchasers to give your organization a possibility. On the off chance that your business is solely on the web, at that point your clients just have two clear windows into your organization's activities are your site and your request satisfaction. The experience they have online when requesting their things is one portion of their experience with your organization, and request satisfaction process is the other.





In the event that both of these are observed to need or don't satisfy their guidelines, it tends to be adverse. You need to guarantee that each client gets the best administration and has an incredible affair all around when managing your organization. It has a tremendous impact on a client's experience. It takes a ton to encourage a simple and proficient turn around logistics process, yet an arrival on your speculation is nearly ensured. It helps increment deals significantly. While dealers may bring about critical costs while executing a reverse logistics process, the ROI will be monstrous. When your money is in on the open doors that turn around logistics can give, you'll have the capacity to convey an incentive to your investors. Aside from client reliability and maintenance, keeping investors cheerful is the following thing you'll have to stress over by exploiting reverse logistics is an incredible method to do only that. The reverse logistics face challenges than forwarding logistics as they can't forecast, needs excess time to process sales again, resale the conditioned items and no optimal policies for returns.

The turn-around logistics have consideration of astounding components from merchandise exchange to return readiness. Merchandise exchange creating requirements to think about the effect of profits on your business, while remembering you need to urge clients to purchase. One approach to do this is to affirm conveyance addresses as opposed to just depend on what the client has given. This can build your first-time conveyance achievement rates essentially. Numerous organizations have discovered

achievement utilizing this strategy. Contingent upon the extent of your business and normal volume of requests, you can either call clients to check their area, or set up an online affirmation stage. Utilizing this technique, or a comparable one can enable you to keep up an arrival arrangement that is attainable for you, yet takes into account the fulfillment of clients. However, return planning requires distinctive strategies to monitor the requests they get and are reasonable so they incorporate return frames, return marks and prepaid dispatch. There are several reasons for the reverse logistics being inevitable which includes returns, damaged goods, miss-delivered or undelivered goods, malfunctioning-goods, exchange programs.



The challenge is to recover the highest value for each item and for that, we need to handle the recovered as restock, repackaging for resale, return to vendor, disposition and scrap. But the different benefits of reverse logistics include reduced administrative, transportation and aftermarket support costs, increased velocity, increased service market share, higher achievement of sustainability goals, greater customer service and higher retention levels, recovery of capital investments in assets and organized working capital.



Reverse Logistics

Reverse Logistics is the process of returning products back through the supply chain. It may include several activities such as disposition determination, recycling, re-manufacturing, disposal, re-sale, warehousing, or transportation. The establishment of a series of procedures to transport used products from the end-users to industrial facilities, along with the existing forward supply chain procedures, creates the closed loop that today's products follow. This establishment asserts the passage from the so-called "cowboy economy," where resources are plentiful, to the "spaceship economy," where it is not affordable to throw anything away.

During the past decades, companies from a wide variety of industry sectors have paid increased attention to recovering and exploiting the remaining value in products after the end of their life or use by customers. There are a number of factors which are responsible for the ongoing

trend. The most important is the potential profitability that can be achieved by firm's engagement in such activities. Return rate also increases due to end-of-lease returns, returns of unsold products and the collection of reusable containers. Increased legislations require firms to be more responsible for proper disposal of end-of-life products and adopt liberal return policies. Adding to these is the development of an environment- friendly brand image which is also motivated by increasing consumer environmental consciousness.

Classification of recovery and disposition options

One of the factors that determine the profitability of related operations is the classification of used products and the configuration of the process for quality assessment. An important decision in every closed-loop supply chain is determining the suitable recovery action according to product condition. Figure 1 depicts the hierarchical classifications of recovery as we move up the pyramid.



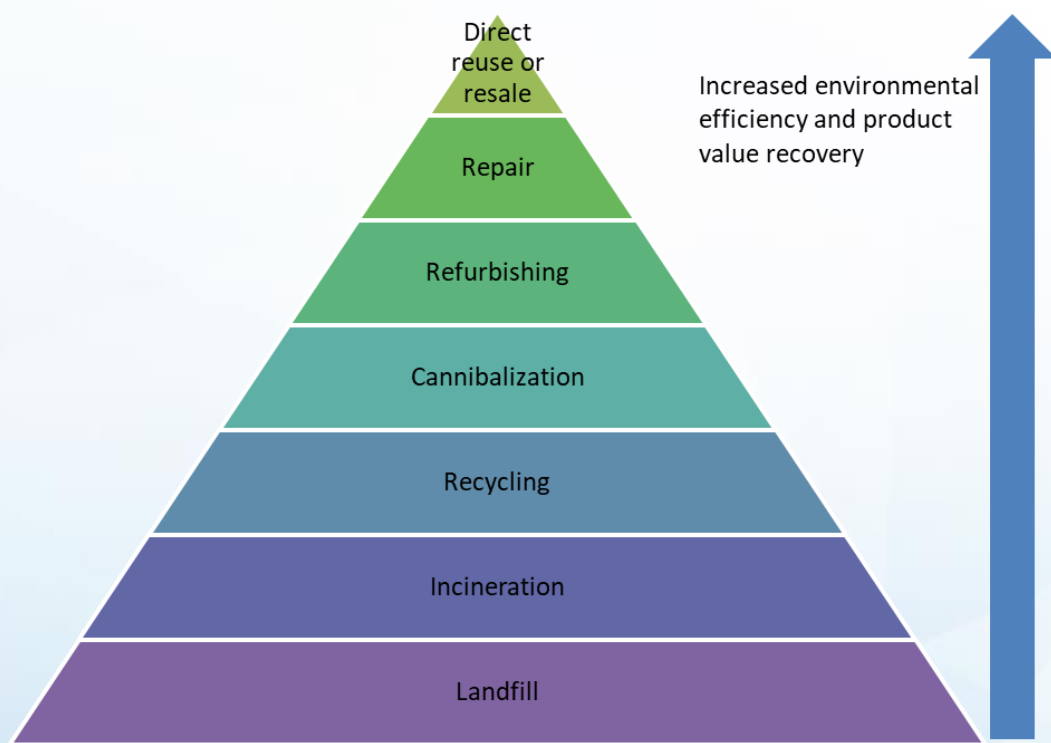


Figure 1: Hierarchical classification of recovery and disposition options in closed-loop supply chains

Quality assessment and classification of returned units

Establishing a procedure to assess the quality of returns has important implications on closed-loop supply chain. Compared to the conventional forward supply chains, quality assessment can be more critical in closed-loop supply chains given the highly volatile quality of returned products and the differences in handling and processing different quality categories. Availability of timely and accurate information regarding the quality of returned products plays a key role in efficient management of a closed-loop supply chain as it can facilitate the selection of appropriate handling and recovery options, eliminate waste of effort on practically useless units, and thus provide significant cost savings.

Once a company decides to establish a classification procedure, it must

determine the sorting procedure and the exact number of quality classes that will be used for classifying the returned products. The determination of a sorting procedure essentially involves the selection between a centralized vs. decentralized system. A centralized sorting system offers advantages of economies of scale, experienced personnel and increased procedure efficiency. On the contrary, a centralized sorting system, because of the delayed quality assessment of returned products, can waste efforts and resources on units that eventually turn out to be completely useless. The determination of the number of quality classes should be based on the trade-off between robust logistics planning and production scheduling due to elaborate returns classification and increased classification complexity that results in a lack of accuracy.



Taxonomy of classification methods

Multiple solutions are employed to gauge the quality of returned products. It is possible for closed-loop supply chains of similar products to adopt completely different classification schemes. The following are the most commonly used methods for gauging the quality of returned used products:

- **Complete disassembly and inspection:** At present, this is considered the most accurate method and can be implemented in nearly every type of product. It is time-consuming, expensive and highly unpredictable in terms of product or parts yield and duration. Disassembling complete returns can be implemented mostly in centralized locations since it requires experienced personnel and specialized equipment. The concept of design for disassembly and technological innovations that aim to replace manual disassembly operations with automated ones may prove to be useful in relieving some of these disadvantages of complete disassembly.
- **Development of special inspection tests:** Development of product-specific inspection methods usually requires long-term research efforts. For example, although the vibration testing method employed by SKF was initially developed as a maintenance control tool, currently it is being used as a bearing reusability evaluation tool as well. In general, such specially designed procedures are expected to provide relatively accurate results without demanding product disassembly. The development of such tests can consume a lot of time and money. Thus, it is advisable only for products that are anticipated to be in the market for relatively long periods of time without significant modifications. This method is much cheaper than complete product disassembly of returns in terms of variable sorting cost. It is advisable to perform these special tests at central facilities since sophisticated equipment are required.
- **Data recording:** Data recording is considered as one of the most technologically innovative solutions for gauging the quality of returned products. These techniques record a number of important usage parameters. For example, HP's printers are classified according to the number of pages that have been printed by a particular printer. Once the returned products are received, these parameters can be used to gauge each unit's quality. This method can be performed away from the central facility because of its ease of use. It has lower fixed and variable costs as compared to the Special inspection tests. However, such methods have questionable accuracy. There is generally a trade-off between accuracy and cost effectiveness. Recording several usage parameters may decrease the errors, but it may complicate the evaluation process.



- **Visual examination:** The classification of returned products is based on subjectively evaluating a number of characteristics. It can be implemented in decentralized locations as it does not require sophisticated tools and experienced personnel. Sorting via visual examination can be more prone to errors than any other method.

Figure 2 illustrates the basic relationships between different product classification methods for important characteristics. A larger grade indicates better performance of a sorting method for a given criterion and flexibility indicates the ability to locate a sorting method in decentralized facilities.

Quantifying the cost

Closed-loop supply chain managers face the challenge of quantifying the cost of

returned products misclassification when significant grading errors are expected. Such quantification allows them to justify their evaluation of alternate suppliers and also to specify the necessary initiatives to motivate them in order to improve their accuracy. The two determinants of the cost that a closed-loop supply chain bears due to inaccurate classification are poor sorting accuracy and the large distinction in the attractiveness of sequential quality classes. Companies can, to some extent, reduce profit losses from low classification accuracy by changing the acquisition prices offered to suppliers. An acquisition policy with rather small differences between sequential quality classes can result in greater robustness of the economic outcome of recovery activities. On the other hand, such a policy can eliminate the motive of the supplier for returning products with better quality.

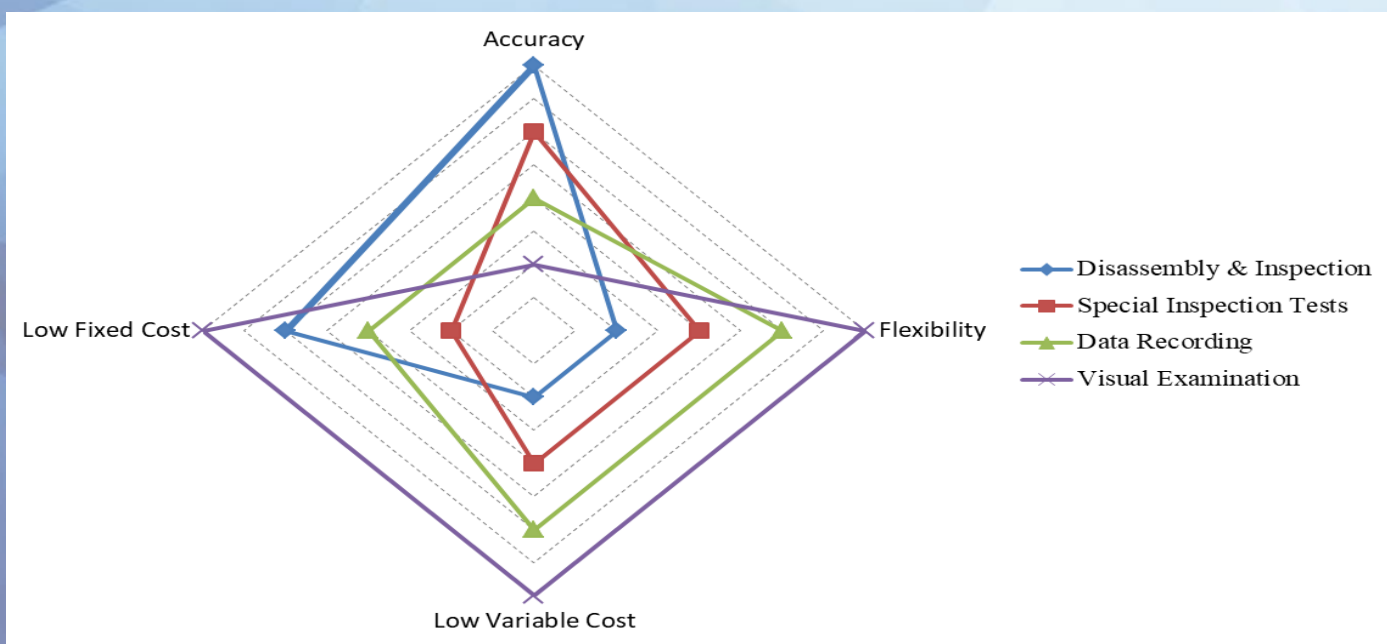


Figure 2: A comparison of alternate classification methods for closed-loop supply chains



Introduction

In the coming years we have to realize a huge challenge, implementing smart mobility. The transportation requirements are going to increase by 100% in a decade and we cannot double the infrastructure as it has reached the limits. Need of the hour is to develop new intelligence transport systems. These should be developed in a way that they are not just meant for transportation but for contributing to our higher social goals, contributing to mobility, sustainability, accessibility and safety. And to achieve this making a leap directly towards fully autonomous trucking, however, remains a distant vision but we may experience platooning soon.

What is Truck Platooning?

Truck Platooning is the emerging technology where two or more trucks are linked in a convoy. The trucks in a convoy maintain a close distance between each other making use of connectivity technology that includes radars, cameras, proximity sensors and other communication technologies that may or may not use automated driving support systems. The truck that is first in the array acts as a leader which directs and leads the trucks that follow. The trucks following the leader make little or no action from drivers to react and adapt to the changing movements of the leader. An illustration of this is given below in the diagram. In the similar manner, more trucks can be attached to the convoy.

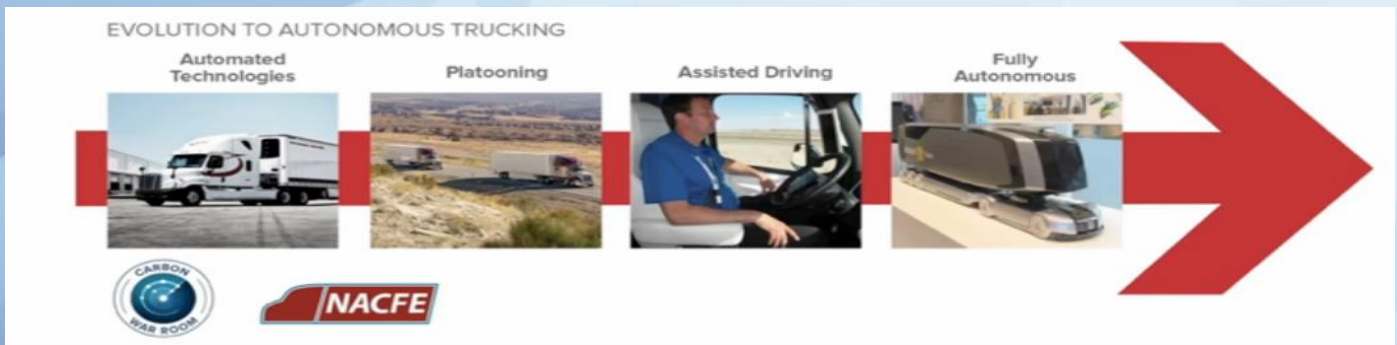


Fig. 1.1 – Evolution to Autonomous Trucking
Source - [https:// Trucks.com/](https://Trucks.com/)

Connecting Trucks

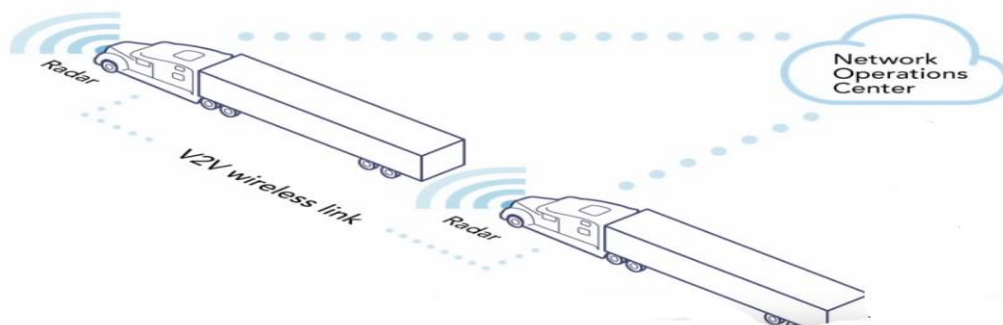


Fig. 2.1 Truck Platooning Architecture
Source - <https://peloton-tech.com>



Benefits

Truck platooning has a lot in store to offer to the world. It has a great potential to make the road transport cheaper, more efficient, cleaner and safer. This is the reason that drives truck manufacturers to bring these platoons on roads.

- **Cheaper** – The operating costs of the truck gets reduced, as the trucks use less fuel because of the reduced aerodynamic drag on all the vehicles in the platoon. The fuel savings of two-truck platooning is estimated 4% over the two trucks operating in real-world conditions.
- **Efficient** – Platooning helps in optimizing the road transport to a great extent. It makes the use of road transport more effective by delivering the goods faster through reduced traffic jams. Platoons take limited space on the road, and hardly experience any sudden acceleration and braking events, unlike the traditional trucks that are not linked to each other.
- **Clean** – Truck platooning makes sure that trucks move in a convoy and follow a dedicated path, moving very close to each other. Given that the trucks in an array are very close together, the air drag friction is reduced significantly. The fuel consumption and Carbon dioxide emissions can be greatly reduced using this technology.
- **Safe** – With all the benefits that come along truck platooning, safety is also one of them. The technology helps improving safety as it employs a

number of communication technologies. The reaction time also gets reduced with platooning that makes use of automatic and immediate brakes, where the trucks following the lead vehicle only need one-fifth of the time a human would need that helps increasing the safety by reducing the number of collisions.

How is Truck Platooning disrupting the logistics industry?

Truck platooning, an emerging technology has made almost all the stakeholders, including truck manufacturers, fleet operators, knowledge institutions and Government bodies realize the benefits that come from perfecting these platooning practices and thus, these stakeholders have been testing this technology on the roads.

To emerge as a powerful technology and have a competitive strategy, platooning focuses on building an integrated architecture. This integrated approach is nothing more than an equal partnership between four different stakeholders – the Government, the transport and logistics market, knowledge institutes and the environment.

All focussed shoulder to shoulder on the same goal with benefits for all participants in a win-win mode. In order achieve such a horizontal cooperation between all these stakeholders where nobody is the boss, unlike the traditional organization, rather the customer is the boss, however, the customer does not have the power enough to go for the breakthrough. All

Truck platooning: Integral approach

EUROPEAN TRUCK PLATOONING creating next generation mobility



Fig. 4.1 Truck Platooning – Integrated Approach
Source - <https://eutruckplatooning.com/>

these stakeholders work independently, but in a close relation with each other. No matter what company truck one buys with whatever equipment, one is always free to choose the technology vendor of one's choice.

For better understanding, let us take the case of FedEx, where the CEO of the company, John A. Smith stated that platooning will greatly help FedEx. It brings along itself the safety aspects to the driver and the vehicle. Also, the fuel efficiency. For a logistics company like FedEx, it's really crucial. This will also enhance the driving experience. FedEx run around 2 lakh vehicles every day, it is believed that this will help them in improving line-haul operation to a great extent.

Also, he holds a view that for the pickup

and delivery model that is being employed by FedEx, they do not ever see that being driverless, can replace the professional driver on the pickup and delivery side.

Conclusion

The technology has already passed large-scale cross-border trials that were conducted in actual motorway conditions in 2016. It is also being estimated that by 2025, the infrastructure that supports platooning will expand significantly. It will start to operate on the national motorways and European ITS corridors, making its way across the border to TEN-T network. Consequently, it is expected that by 2025 will be the year when platooning becomes completely normal and accepted phenomenon in Europe and USA. There is a still a long way to go before we see platooning in India.

Investment from Industry Leaders



Fig. 4.2 Investors in Truck Platooning
Source - <https://peloton-tech.com/>

However, the world is sceptical of the future, as what will be the situation in 2025. Of course it is difficult to predict the future and that's what we learned from Peter Drucker, he said "Don't predict the future, create it because trying to predict the future is like driving down a country road at night with no lights while looking out of the back window" and so we are trying to create the future in this spirit. In the future we might see the benefits and the advantages that come with the technology for the road transport industry

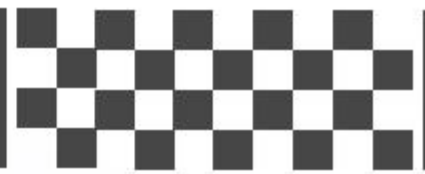
FedEx Says Platooning Technology Could Revolutionize Truck Fleets



Fig. 4.3 Comments made by FedEx
Source - <https://Trucks.com/>

to be transformative, along with the other developments that will happen in the autonomous vehicle technology.

Truck platooning is not the guiding force for the introduction of new services. Rather, it provides the opportunities to capture new business that is the dictating force and to enhance and improve the current operations. It will also demand for the creation of the legal architecture to ensure sustainable development.

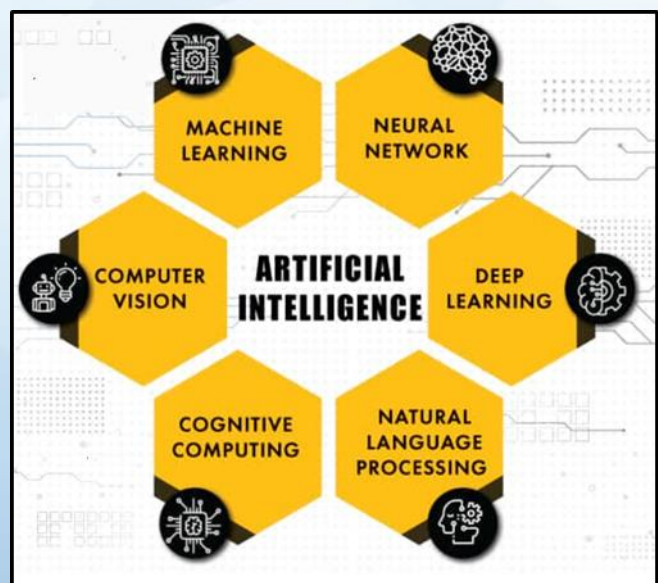


- Deepak Rawtani & Aditya Gupta
K J Somaiya Institute of Management Studies and Research



The above photo will make you remind of Sophia, the social humanoid robot developed but activated in 2016 by Hong Kong based Artificial Intelligence (AI) and engineering company, Hanson Robotics. Anyways, a lot of water has flown down the river Nile since Sophia was invented and now the trend of companies catching the AI-led robotics flu has gained ground. One such example is RADA, the AI based humanoid deployed by Vistara Airlines at Delhi's Indira Gandhi International Airport's Terminal 3 to assist customers before they board their flights.

discover patterns and simultaneously act on those interpretations.



What is Artificial Intelligence?

Artificial Intelligence or Machine Intelligence is an area of computer science concerned with the creation of intelligent agents like smart machines that are capable of working and thinking like humans and simultaneously take the required actions. Parsing through the complexity of data created by humans, AI algorithms perform intelligent searches, interpreting both images and texts to

Robotics is one such example of Industries ranging from Banking to Aviation and Automobiles to Health that are betting big on AI. Thus, highlighting the importance AI will play in future expansion strategies of organizations. With all these major milestones why should e-commerce be a latecomer to AI led growth story. One area where e-commerce firms are heavily placing their bet is the application of AI in Reverse logistics.



What is Reverse Logistics?

You didn't like the product such as a smartphone or any merchandise you had ordered via some e-commerce website or did it not meet your desired specifications and expectations, worry not as the e-commerce website will arrange for the pickup of the product from you to take it back to its warehouse. After the pickup of the product, you again have the option of ordering a new product matching your specifications or the same product suiting up your expectations or don't order the product at all, as per the return policy of the website. This entire process of retrieving the product to taking back to the warehouse as discussed in the previous sentence is called Reverse Logistics in layman terms.

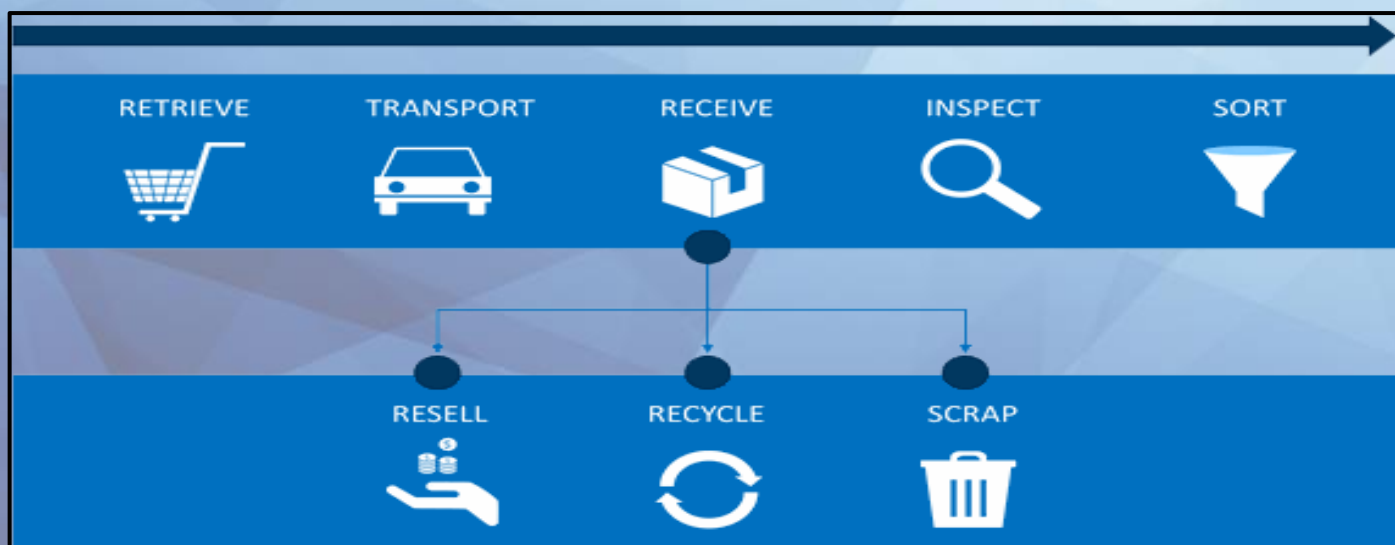
Hence, Reverse Logistics can be defined as the set of various activities conducted by an organization after the sale of the product to recapture the value of the product and offer it to the manufacturer or distributor either to end the product's lifecycle or for refurbishment and servicing. The organization performing

reverse logistics can be the manufacturer itself or the third-party logistics player (3PL) contracted for providing the service on behalf of the manufacturer. Further after the recollection of the product, it could be recycled, reduced or disposed of reused or refurbished as per the discretion of the manufacturer as the ownership of the product passes to him.

Why Artificial Intelligence in Reverse Logistics?

Having discussed the technology of AI and the process of Reverse Logistics, let's have a look at the fusion of the two. With the increasing utilization of reverse logistics by the end consumers and rise in the number of returns strangling the bottom line for retailers and e-tailers, the opportunity that AI presents in reverse logistics is more obvious than it had ever been. Some of the implied ones are as follows:

- Correct disposition decisions about the returned product will ensure that the number of times it gets touched is minimized so as to prevent its hampering.





- Near accurate determination of the shortest and most efficient path connecting the user and the warehouse will help optimize the transportation and logistics cost.
- If artificial intelligence or computerized machines are implemented in the Supply Chain process, the scope of error could be reduced drastically. With augmentation in the predictability of consumers returning the products, repetition of such rejections along with financial and human capital loss would be a drastically reduced.

Thus, AI will not only contribute through Predictive Analysis but also result in Data collection for the e-commerce firm.

The figure below describes the effective use of AI by Lennox to increase the efficiency of its supply chain.

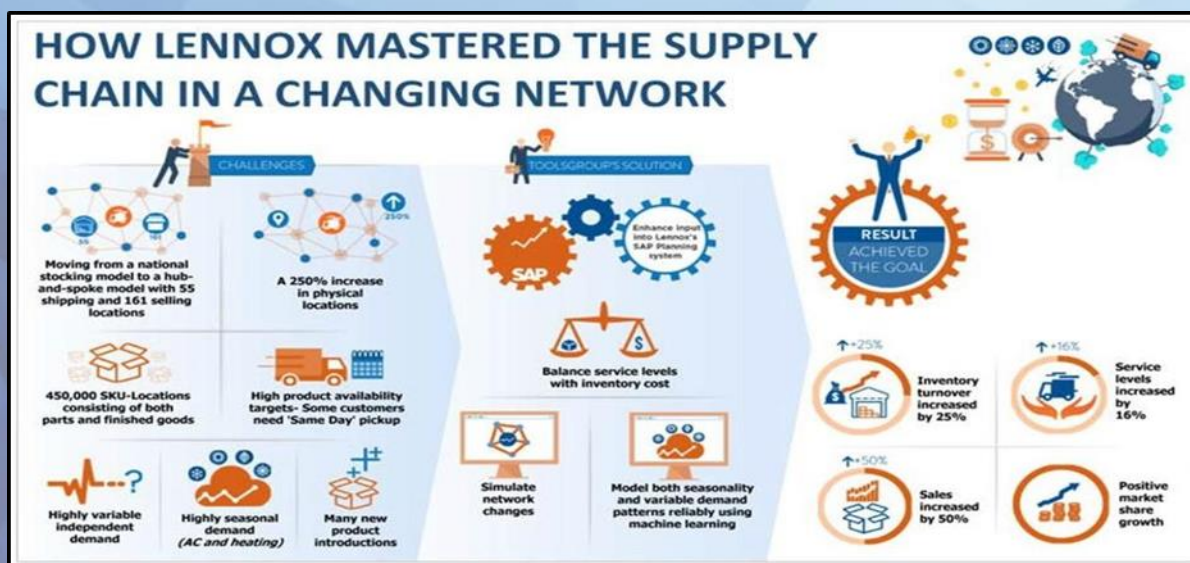
Amazon, for instance, is using machine learning and artificial intelligence to figure

out the category and type of products the customers keep with themselves and the types they often tend to return. In this way it can tweak and modify its offering so that the customer feels hesitant towards returning and keeps the extra product, thereby increasing the company's revenue and reduce costs associated with reverse logistics.

Artificial Intelligence in Reverse Logistics: Challenges

Artificial Intelligence provides organizations with the knowledge to make data-driven decisions that are leaner and faster than traditional approaches. Some common classes of AI problems.

- **Lack of Skilled Resources:** AI is a new technology and there is a shortage of skilled labour to develop and manage analytical content for e-commerce firms. The problem gets aggravated when Human Resources hired for AI implementations lacks the knowledge of how Supply Chain Management Works.





- **Cost of Integration:** One cannot escape from the fact that AI technology is expensive. While the cost of AI systems can be expensive, the key challenge is integration due to one simple fact – they are all customized. The integration includes the cloud-based hardware, human resources, and scalability factor of AI and cloud-based systems
- **Inadequate Infrastructure:** AI along with Machine Learning requires a vast amount of data processing capabilities. This coupled with the complexity associated with lack of Supply Chain Management knowledge of Human Resources takes a toll on already built infrastructure. The potential is up-gradation of infrastructure and SCM training of Data Scientist.
- **Operational Cost:** An AI-operated

machine has an exceptional network of individual processors, relays, and other components. Each of these parts requires replacement from time-to-time to maintain operational integrity plus a vast amount of energy to operate.

Conclusion

With the e-commerce industry becoming data heavy and number crunching, AI can come handy in coming years. The core concept of Predictive Analysis is the brain behind the early success of AI in logistics. However, a few roadblocks like lack of skilled manpower, inadequate infrastructure, Integration, and Operational costs are minor hiccups but they too will become a thing of past if the AI moves with an upward trajectory in coming years.

Do you believe in Afterlife, *a death that leads to a new life*? Before you answer this question in your mind, let me elucidate that I am not referring to a human being or any breathing creature, but it's about a product. It could be a product that you use for your everyday utility or maybe once in a blue moon. Some simple examples would be your car, juicer, mobile phone or laptop. Typically, people don't think much about what happens when we return these products to the vendors or its manufacturer once they go bad maybe because they were busy pondering how to get a replacement as swiftly as possible in the most economical way. It's normal to think that way as a customer, though life may not be as easy for a person handling these unsold / returned / end-of-use / damaged / end-of-life products. For an organization that has stacks of returned products in its stock, it is very important to capture the value from these used products or to dispose them appropriately. Usually, organizations follow a set of procedures to dispose any product safely if the damage to the product is permanent/irreversible or re-engineering the product isn't cost-effective. However, in several cases, we can extract the value left in the product using simple or complex process in order to bring it back into the market for sale thus producing pleasing results for the manufacturer. This is known as Reverse Logistics and sometimes also referred to as Green Supply Management since it is environment-friendly to reuse, remanufacture and recycle these



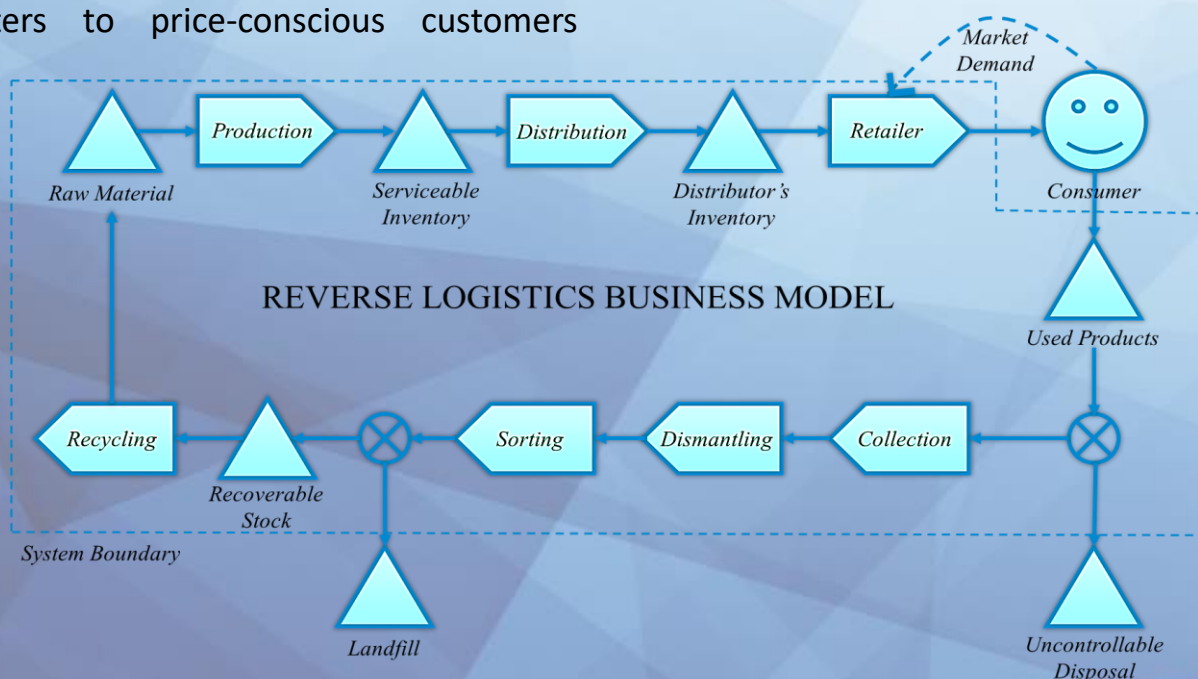
products, finally creating value out of a used product and disposing least possible amount of waste into the ecosystem. Businesses use capitalist strategies and won't pay much attention to such practices unless it is profitable to them. But, if an efficient business model is deployed to deal with this reverse flow of products, organizations can enhance profitability significantly.

Let's understand this with a real-life example of HP printers. HP manufactures a wide range of printers for home and office use in the US. Sometimes for home use, people buy Office jet printers which are usually bulky, highly efficient, have capabilities which are seldom used in a home and hence expensive. The reverse of this is also quite frequent when customers buy Desk-jet printer for business use. The consumers often realize this after using the printer for a few days, and then they request for a replacement with the one that serves the purpose, through after sales services of the company. HP follows high standards of customer service and usually replaces the printer. The



depreciation of such used printers is negligible since it was used only for few days or months, while it was actually manufactured robust enough to be used for many years and is shipped with a warranty of at least one year. HP directs the used printers in a facility dedicated for processing these machines. In the facility, printers are initial tested for any defects and are repaired if required. Finishing is done to make the printer look just like a new one by performing body repairs. Now, this printer is called “refurbished,” but have the same warranty as that of a new printer and has a price tag a little lower than a new machine. Finally, HP uses these printers for replacement of defective printers after declaring the same to the customers and also sell refurbished printers to price-conscious customers

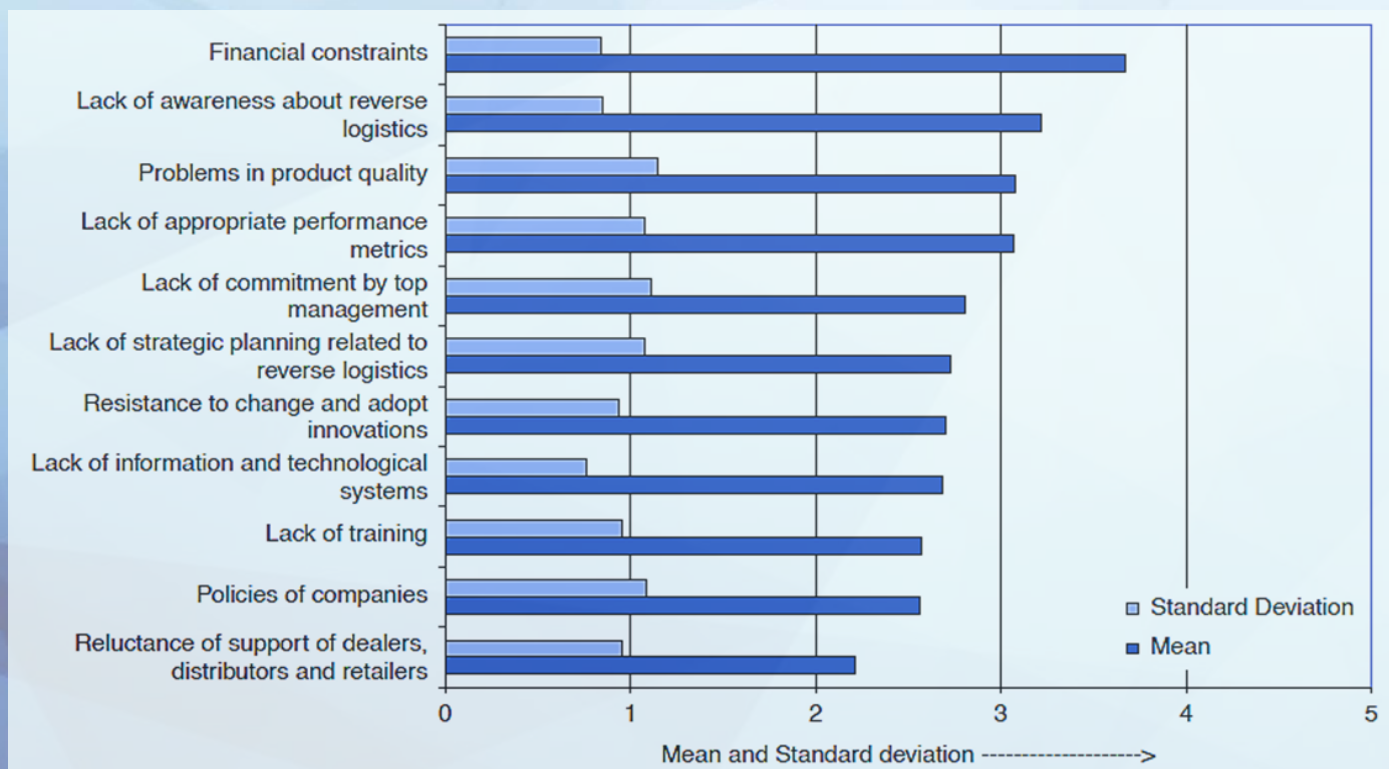
directly. This way HP was able to extract huge value from the used products, earn profits, reduce the risk for customers by taking the responsibility of sold printers, contribute to the safe environment and most importantly, making customers happy. Similar strategies are used by many other successful organizations like Toyota, Patagonia, IKEA to name few. The concept of reverse logistics is growing bigger and popular with each passing day in many e-commerce companies, retail sector, and many startups. It is very important to device reverse logistics efficiently in the organization especially in the retail sector where 4 to 6 percent of all purchased products are returned. A typical Reverse Logistic Model is shown in the flow diagram.





Talking about the current situation of reverse logistics in India; auto, electronics, paper, and food processing industries turn out to be the frontrunners. The organization should take strategic level decisions to look upon reverse logistics as an opportunity to earn profits and for the greater good of realizing sustainable practices. In fact, in cut-throat competition on a global scale, the profit margins are squeezing, and organizations can't afford to lose scarce resources. There are few issues which act as key barriers to the implementation of Reverse logistics in India as discussed in the Journal *"Survey of reverse logistics practices in manufacturing industries"* are

shown in the chart below. However, there are numerous ideas which we can use to overcome these barriers, such as providing incentives to customers for returning the end-of-life products, streamline the WIP and inventory system for returned products, using high-end software to analyze the feasibility of various returned products in real time and many more. It is quite evident that Reverse Logistics can help in transforming the competency of an organization and they should take prompt measures to excel in this zone of operations. Quicker we understand it, more promising the future will be.





Introduction

Innovation in Supply Chain has exceeded customers' expectations. Companies off late have begun to accept and embrace '*the fourth industrial revolution – advancement in technology*' supply chain environments that will transform our companies into the next-gen digital businesses. Introducing Technology in the supply chain has brought in:

- Competitive Advantage
- Better Customer Relationship
- Increased efficiency
- Better operations
- And many more

Businesses increasingly make use of the opportunities beyond their domestic markets, thereby ensuring there is a simultaneous growth in the supply chain globally, especially by using techno-advancements. From E-Fulfillment in Fingerhut to E-procurement in IBM, E-Supply chain has an enormous advancement. One such strategy is "Drone" – that provides E-Deliveries to enhance safety, security and the supply chain's overall efficiency.

Drones

History

Earlier Drones were used only by armed forces. Austrian Army developed this aerial vehicle in 1849 to attack Venice with explosives. Later on, the US Army used these as target drones, capable of collecting radio-active data during the Cold war.



What are drones?

Flying Robots without Human Pilots. Various sensors were equipped such as distance sensors, time of flight sensor, a chemical sensor, RGB sensor for collecting the wavelength. In addition to this, Accelerometers, barometers, magnetometers, gyroscopes are some of the standard features a drone would have. Off late drones are now available for Photography and Videography purposes.

Industries that are currently using Drones :
Agriculture – to spray pesticides uniformly and watch out for plant diseases

Energy – to monitor oil rigs

News – to cover breaking news

Photography/Film – to capture the moments/images

And for real estate and other emergency services.

Drones in Supply Chain

Drones are automated Aerial Vehicles that have tracking devices of the products. Also, they are off late replacing carriers in a lot of cases. Drones are loaded with customers' products before they take off



to the customer's place. Amazon and Google Inc. have gained a lot of attention after bringing that scenario on board into their supply chain as they use these drones to deliver the customer's products. However, Walmart has got a different idea of using this within its warehouse, and they find the initial results to be positive. In addition to this, Audi is starting factory tests to deliver the parts from one location to another.

Advantages

- The drones equipped with GPS, RFID, OCR, and barcode readers that can quickly locate and identify products within the stipulated time.
- Drones are independent of the 3rd party carriers to deliver the products.
- Drones deliver the products faster at the customers' doorsteps thereby increasing the improved customer experience.
- Using Warehouse Drones for Digital Inventory Management

- Cost reduction compared to the previous supply chain models used
- Increase in Sales during Holiday seasons
- Delivery to difficult-to-access areas

Drones - A disruptive technology in Supply Chain

The forecast shows that by 2021, there would be 1,6 million drones on air. Should we thank the technology? It would cause security, safety, interference in other military and commercial aircraft. The major concerns are:

- Collision issues
- Insurance Costs
- Hacking or Theft
- Weather conditions
- Operational Range constraints
- Privacy Issues
- Airline Interference
- Operating for Illegal Activities
- Crashing
- 24*7 spying
- Limited Battery Life



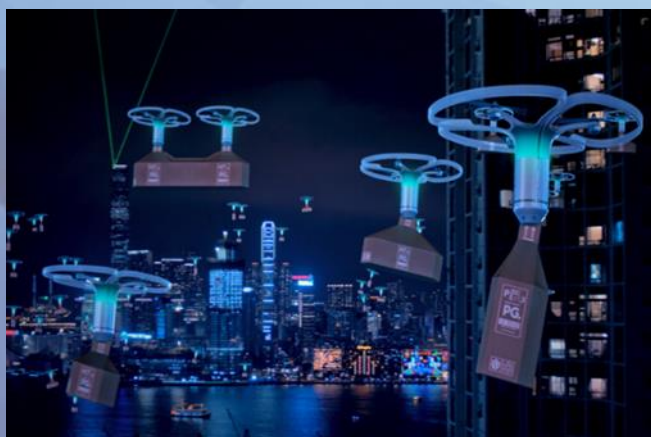
Source: dailymail.co.uk



Considering all the above, it requires permission not only from delivery systems but also from aviation authorities.

Currently, drones are limited in number but after years grow by and the level of technology acceptance increases rapidly delivering through drones would reach the peak of difficulty. For a drone to work effectively, it should use sensors to avoid the touch of the moving objects that would invariably affect the movement of the drone. It should also have radar to be able to recognize the power line and its route and a GPS in addition to all this. But technically considering all these the feasibility of using the Drones in supply chain management reduces as it would make the drones heavier that it is supposed to be making it costlier and less effective.

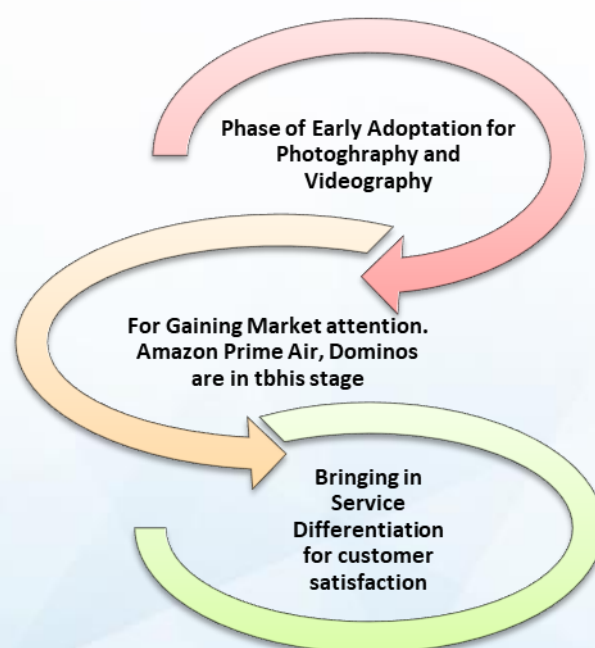
With a rising urban population to be specific, it becomes too cumbersome for a drone to get operated. Also, drones suffer a problem just like a rocket, the farther it goes, the more energy it needs.



Source :

<https://www.dezeen.com/2018/05/21/dezeen-drones-documentary-elevation-release/>

Current Phases of Drone's Evolution



Industries that Drones will disrupt in the Future

- Police and Defense
- Arts and Entertainment
- Medicine – Drug and Blood Delivery
- Gaming - Drone shooting and Drone Racing
- Logistics - The introduction of Drones into the scenario would mean that the delivery men take a back seat or are removed from the scene and there are high chances that they would lose their jobs.

In addition to this, even retailers and shippers would go behind the scenes as after years pass by; we would be visibly noticing drones checking the stock availability and taking them, thereby effortlessly gliding into the supply chain system of the companies.



The last mile to the customer is considered to be the most expensive but inefficient aspect of Supply Chain Management. However, Drones take care of them by making the deliveries as quick as possible with lower cost. Just imagine placing an order, and you get your product delivered in less than 30 minutes. But the issue now is a technology replacing other technologies that required human assistance. No matter how much benefits it brings to the supply chain on a larger scale, when you consider the long term all that matters is how efficient the technology is and how effectively it has adapted to the change in the logistics arena. Also, regarding the challenges that are attached to the use of Drones, if it is limited to only certain weather conditions, it will affect the Last – Mile Supply Chain Management of the organization.

Conclusion

Any technology that is overused becomes

hazardous for the same industry. Drones, in this case, offers both advantages and disadvantages but after years drones would start disrupting the growing mechanism of activity like Supply chain. Having identified the model, it is upon us to wisely use the technology and maintain it on a smaller scale for the better effectiveness and efficiency in the Supply chain. Also, acceptance of drones into the commercial sector will take some time due to its disruptive changes that it might bring forward over the years.

Following points are to be considered to prepare the industries with Drone

- Companies that invest in Supply chain technology have better resilience when compared to the companies that don't.
- Supply chain disruptions are part and parcel of the industry model that would impact the business and financial performance of the company.

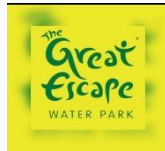
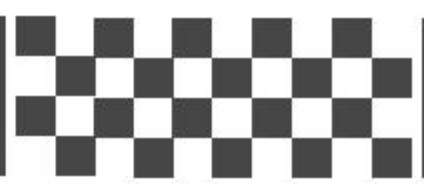


Rise in the no. of mobile users and consumerism has created perfect environment for all the business-minded individuals to make a claim in the multi-billion-dollar e-commerce industry.

Young minds with the high risk appetite are ready to take on challenges. With the zest to succeed among individuals and new business ideas, startups are growing.

E-commerce startups in India

- **WOTU:** WOTU (We Organise The Unorganised), founded by former PayPal employees, Dhruv Sawhney and Mihir Mehta, is India's first B2B marketplace where one can procure any needed commodities. Basically it serves as an e-mandi for products such as fruit, vegetables, pulses, grains etc. It caters to a wide range of businesses such as restaurants, large scale hotels and food chains by connecting farmers, processors and manufacturers. WOTU cuts down on various intermediaries and increases value to both suppliers and buyers as products are sourced directly from large scale whole-sellers and specialized retailers and delivered to the end customer via their reliable logistics partner.
- **DAAKI:** Founded by Amit Dabas, Daaki aims to manifest themselves as a brand that connects with real athletes and fitness enthusiasts. A word DAAKI has been derived from the word DAAK which means Jump in Haryanvi language. Daaki is a premium sports supplement brand which falls under sports nutrition industry. It designs, manufactures and markets custom made supplements and targets youths.
- **Mr Button:** Mr Button is a Bangalore based e-commerce startup, co-founded by Deepak Khetan and Sonam Chauhan. It aims to tap men's fashion market by giving them custom made clothes that fulfil their aesthetics and fashion needs. It has its own online channel mrbutton.in, through which it primarily sells products. It also sells products through host of fashion marketplaces.
- **Netmeds:** With the demand of home delivery for wide range of products rising, Netmeds founded by Pradeep Dhadha, provides a one-stop solution for all healthcare products and prescription medicines with the guaranteed comfort of home delivery. It is considered as one of India's most trusted online pharmacies and was recognised as one of the most promising start-ups in 2016.
- **GoFynd:** GoFynd is founded by three IIT Alumni. It is India's one of the largest fashion Online to Offline company. It focuses on bringing the latest in-store fashion online. To offer fresh and latest fashion to its customers, it sources products directly from the most prominent brands' stores in the country. Real-time inventory access to over 8.5k+ stores enables it to have edge over other e-commerce players.



The Great Escape Water Park



Arihant was founded in 1978 with a focus and desire to service the global marketplace with highly innovative products and services. Arihant has since evolved into a full range of Playground equipment, Water Park Equipment player, while it also owns and operates its own Water Park called 'The Great Escape'.

The aim of this project was to develop a robust demand forecasting system, identify and analyse service quality and based on competitor benchmarking suggest a future expansion strategy.

Initially, the team did a competitive and product benchmarking analysis along with pricing and offers analysis and prepared a presentation with strategies for the park to expand and increase revenues.

Further, the team got an opportunity to visit the water park wherein the team presented the presentation and collected responses for the SERVQUAL questionnaire analysis wherein the gap



between customer expectations and perceptions was collected. The team along got a practical experience for understanding the operations of the water park. The team identified the major customer dissatisfaction issues through Cause and Effect diagram and Pareto chart.

Finally, the team then implemented demand forecasting wherein they took 12-year demand data from their client; on further analyzing the data we could notice that the data showed high seasonality and trend. They used 'Holt - Winters' (HW) method for demand forecasting. The team came up with an Excel sheet, wherein the user can enter the data on the dashboard created and generate various demand forecasts according to their requirement.

Students involved in the project are:

Alubilli Harish, Anuj Agarwal, Debangana Biswas, Manav Barbhaya, Nidhi Ghadiali, Ronak Pandya, Saumya Joshi, Shrenik Karia, Vinit Gala, Vraj Patel and Vividh Shah.

Triangle technology private limited was founded in 2012. they provide different products and services on Home Automation, Video Home, Automation Surveillance, Gate Automation, Intrusion Alarm, Edward fire alarm, Smoke detectors.

The students worked on three domains that is Business Development, Business Analyst and Digital Marketing. The students interacted with the business

leads and got hands on experience for B2C and B2B sales. Also, understanding product placement and market positioning of new services and products and also understanding the customer expectation.

Digital creative being the essence of digital marketing, the learning is of great importance. Creating brochures and corporate flyers was one of the important things learnt. Also, the effective generation of the social media marketing strategy was one of the key roles learnt.





Knowledge Sharing Session

Sharing knowledge leads to a rise in creative and collaborative problem solving skills. It helps to gain knowledge, expertise and skills. We at FORSE believes in adding knowledge and skills through peer learning.

FORSE conducted two Knowledge Sharing Session. 1st KSS was conducted on 27th November' 2018 on the topic of 'Supply Chain Risk Management'. It covered topics such as different types of risks in Supply chain, impact of risks and steps involved in identifying, assessing & mitigating those



risks.

2nd KSS was conducted on 25th February'2019 on the topic of 'Cold Chain'. It covered topics such as cold chain in different sectors, drivers of cold chain, process of cold chain management, different types of it, transport and many more.

Overall, these sessions could add value and knowledge on the topics which were covered. We at FORSE would continue to conduct such knowledge sharing sessions in the future.



KSS Initiatives

We believe in sharing #UltimateGyaan, so apart from conducting knowledge sharing sessions, we also started new initiatives such as Opstionary, Episodes and Opspective. The objective behind these initiatives is to add knowledge and value through social media platforms.

Opstionary

Through this initiative, we share meaning / description of a word related to Supply chain and Operations management.

Episodes

Through this initiative, we share short but crisp videos related to the word of Operations.

Opspective

Through this initiative, we provide platform to students to write an article in the field of Operations and Supply Chain Management.



At the start of the year, when juniors just enter the college, clueless and confused as to how to go about things, what should they do and whom to approach. To help them with this dilemma, we at FORSE organise the 'Intern Diaries' which was conducted on 19th August, 2018. This is a platform where the immediate seniors share their experience on what their profile was and what did they work on during their internship. Not keeping it monotonous, it is more of an interactive session with the seniors solving all the queries. The best part is that this is not just for operations, as one might think, but for all the fields.

Building your resume, while you are in a management college is one the important things, which everyone will suggest. To help students with this, FORSE conducts Green Belt SIX SIGMA course conducted by KPMG held from 27th August, 2018. In this session the students are taught how to define a problem, measure it, approach it, find a solution and also control it after



Having theoretical knowledge is important but it can be volatile if it is not shown practically. To help students with this, we conduct Industrial Visits to places like Raymond facility, JNPT, TATA Motors,

Iskcon kitchen, Times of India Printing Press, Sundaram and a few more. The students get insight as to how these industries work and how to apply their academic knowledge visiting these industries.



During the process of learning and gaining knowledge, sharing it to others not only refines what one has learnt but also enhances the quality of the information. To satisfy this need and to provide a useful platform to the students, SIMSR conducts an international conference called Global Supply Chain Management conference held on 14th December, 2018, with a theme Industry 4.0 in supply chain. Having delegates from China, Prof. (Dr.) Qingyu Zhang, and from Germany, Prof. (Dr.) Dirk H. Hartel. These delegates are the best in their field, gave a very good insight about what are the recent happenings and what are the new developments in the industry. Along with them were other industry experts from L&T. Since it is a knowledge sharing session, there are no limits to it.





Students from different colleges presented their research paper with the topics aligning with the theme, again, which was insightful for the students.



As mentioned, sharing knowledge is important, thus we at FORSE have a quarterly magazine, Momentum, which has a different theme in every edition. This magazine has articles from different business schools, not only from India but from UK as well. Not only this, but there is information about the live projects provided by FORSE to students of SIMSR.



To get expertise in any topic, one needs to research and prepare a lot for the same.

So do we at FORSE when we conduct a Knowledge Sharing Session (KSS). It is a peer learning session where the students themselves talk on a topic, selected by them, and share what they know and understand about it. It is more of an interactive session rather than just one person speaking on the topic.

Sanrachna, a case study competition conducted by FORSE just a little while before GSCM. It is assembled and crafted by the students themselves. Then the BEER simulation game and Endeavour game are the two games which are built from scratch by the members of FORSE. It is a game depicting the logistics and the supply chain with a few real time scenarios, requiring a business acumen to finally become a winner. These are a few events which helps in keeping the students engaged and helps them test their knowledge.



OpsQuest – Simulation War Game (During Melange'2019)

Opsquest is an intercollege event hosted by KJ SIMSR. This competition was driven by Forum of Operations Research and Supply Chain Enthusiasts (FORSE) committee of KJ SIMSR during Melange'2019. First round was an online quiz which tested logical, quantitative, General and Operation knowledge. Final round was a simulation war game held at KJ SIMSR. As an operation manager, many challenging situation may arise and theoretical knowledge may not suffice. This game helped participants to apply

their operation theoretical concepts to overcome this challenges.

Simulation game was a perfect mixture of Supply, distribution and forecasting, where participants forecasted demands and planned production and distribution accordingly. Around 100 teams from different colleges across India participated in online quiz. 11 Teams were shortlisted for final round where they battled for 5 hours for ultimate throne. Finalists were from colleges such as NITIE, TAPMI, NMIMS, BK School of Management and KJ SIMSR.





❖ **Saurabh Yadav, Indian Institute of Management, Visakhapatnam**

"While writing the article on the given topic of Supply Chain, I wanted to focus on Sustainability with respect to the Indian context. I would like to thank the team of FORSE for providing the platform and congratulate them for doing a wonderful job in making the magazine MOMENTUM successful" – **Winner and Writer of Sustainable Supply Chain Management: Indian Context, GSCM 2018 Issue (Supply Chain for Industry 4.0)**

❖ **Jaykumar Damania, University of Nottingham, UK**

"Firstly, thank you for providing a platform for us to motivate and write a article. Writing a article relating to the supply chain is not really a easy task because there are lots of contradictory statements and strategies but support from the Forse team which I got while writing a article was exceptional. The information provided on what can be included in your article was quite upto the mark and I hope that this sort of platform should be coming up more often to encourage our ideas and thoughts." – **First Runner-up and Writer of Robolution: Bitter Or Sweet Additive To The Food Manufacturer?, GSCM 2018 Issue (Supply Chain for Industry 4.0)**

❖ **Jyoten Panditpautra, K J Somaiya Institute of Management Studies & Research**

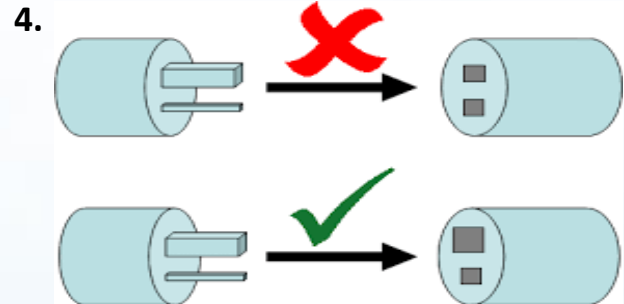
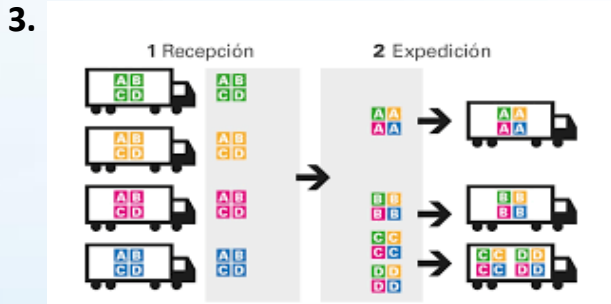
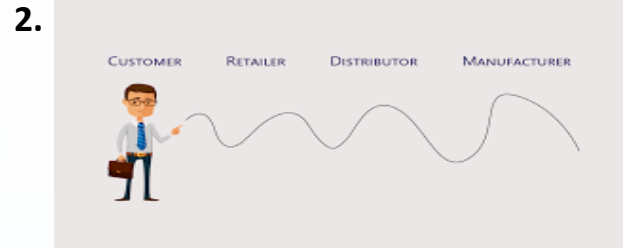
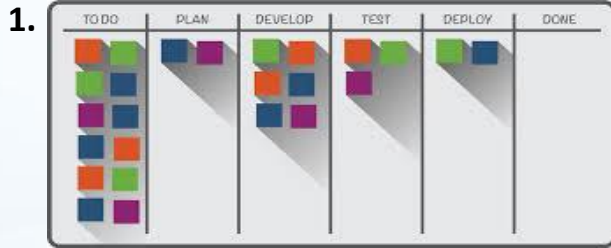
"Article Writing was neither liked by me nor a forte. But then as they say, "Outside of comfort zone is where the magic happens". It helped me learn a lot about the specifics of writing an in-depth article about various concepts in Supply Chain and how IoT has revolutionized the way it works. All in all it was a great experience and an even better learning platform" - **Second Runner-up and Writer of Integrated Supply Chain Using IoT, GSCM 2018 Issue (Supply Chain for Industry 4.0)**

❖ **Kunal Mirchandani & Vraj Patel, K J Somaiya Institute of Management Studies & Research**

"We were Novices to the activity of article writing. But as we put on our efforts and scouted through numerous pages and website for capturing and developing a conceit, we realised we had come so far and explored a complete new dimension of something we had deemed we knew long before! Thank you Team FORSE for recognizing our efforts and publishing our article in the quarterly magazine.." - **Writer of Supply Chain Analytics And The Use Of Big Data, GSCM 2018 Issue (Supply Chain for Industry 4.0)**

Brain Teasers

- Identify the System / Process from the given image:



- Caselet:

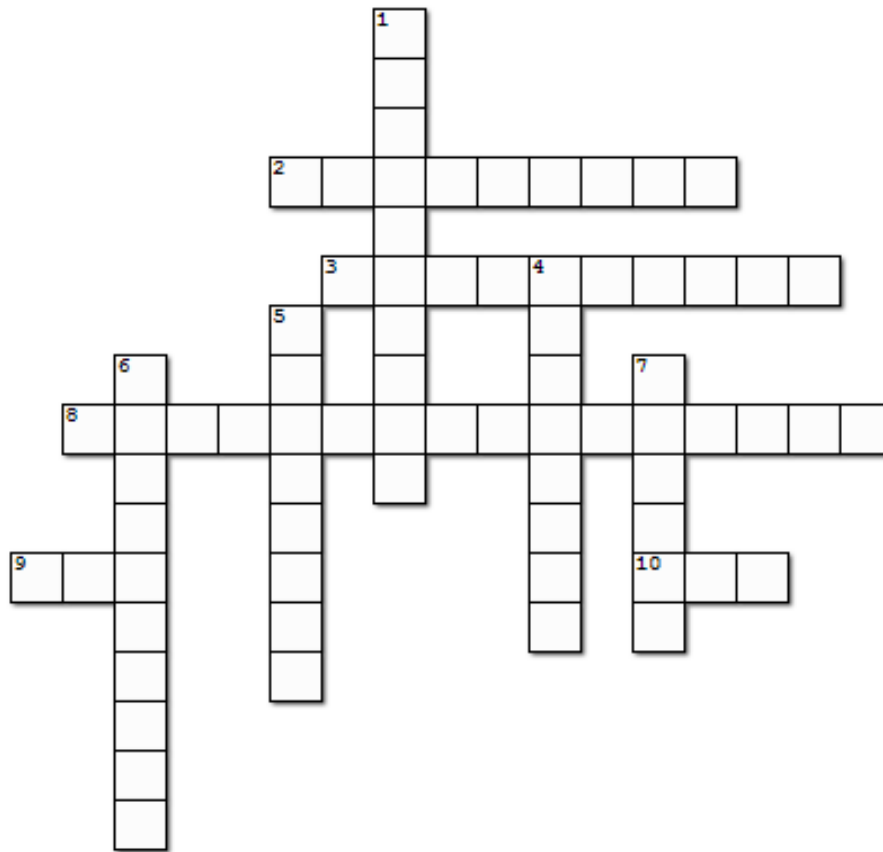
A quality control inspector at the Crunchy Potato Chip Company has taken ten samples with four observations each of the volume of bags filled. The data and the computed means are shown in the following table:

Sample of Potato Chip Bag Volume in Ounces

Sample Number	Observations				Average \bar{x}
	1	2	3	4	
1	12.5	12.3	12.6	12.7	12.525
2	12.8	12.4	12.4	12.8	12.6
3	12.1	12.6	12.5	12.4	12.4
4	12.2	12.6	12.5	12.3	12.4
5	12.4	12.5	12.5	12.5	12.475
6	12.3	12.4	12.6	12.6	12.475
7	12.6	12.7	12.5	12.8	12.65
8	12.4	12.3	12.6	12.5	12.45
9	12.6	12.5	12.3	12.6	12.5
10	12.1	12.7	12.5	12.8	12.525
Total					125.0

If the standard deviation of the bagging operation is 0.2 ounces, use the information in the table to develop control limits of 3 standard deviations for the bagging operation.

- OpsWords



Across

- 2. Type of warehouse where material arriving in bulk is divided into small shipments
- 3. Methodology aimed to reduce time within production system and response times from suppliers
- 8. system of intermodal freight transport using intermodal containers
- 9. These firms are external to company and provide one or more aspect of their entire logistics service
- 10. Large, sophisticated software systems used for identifying and planning the enterprise-wide resources

Down

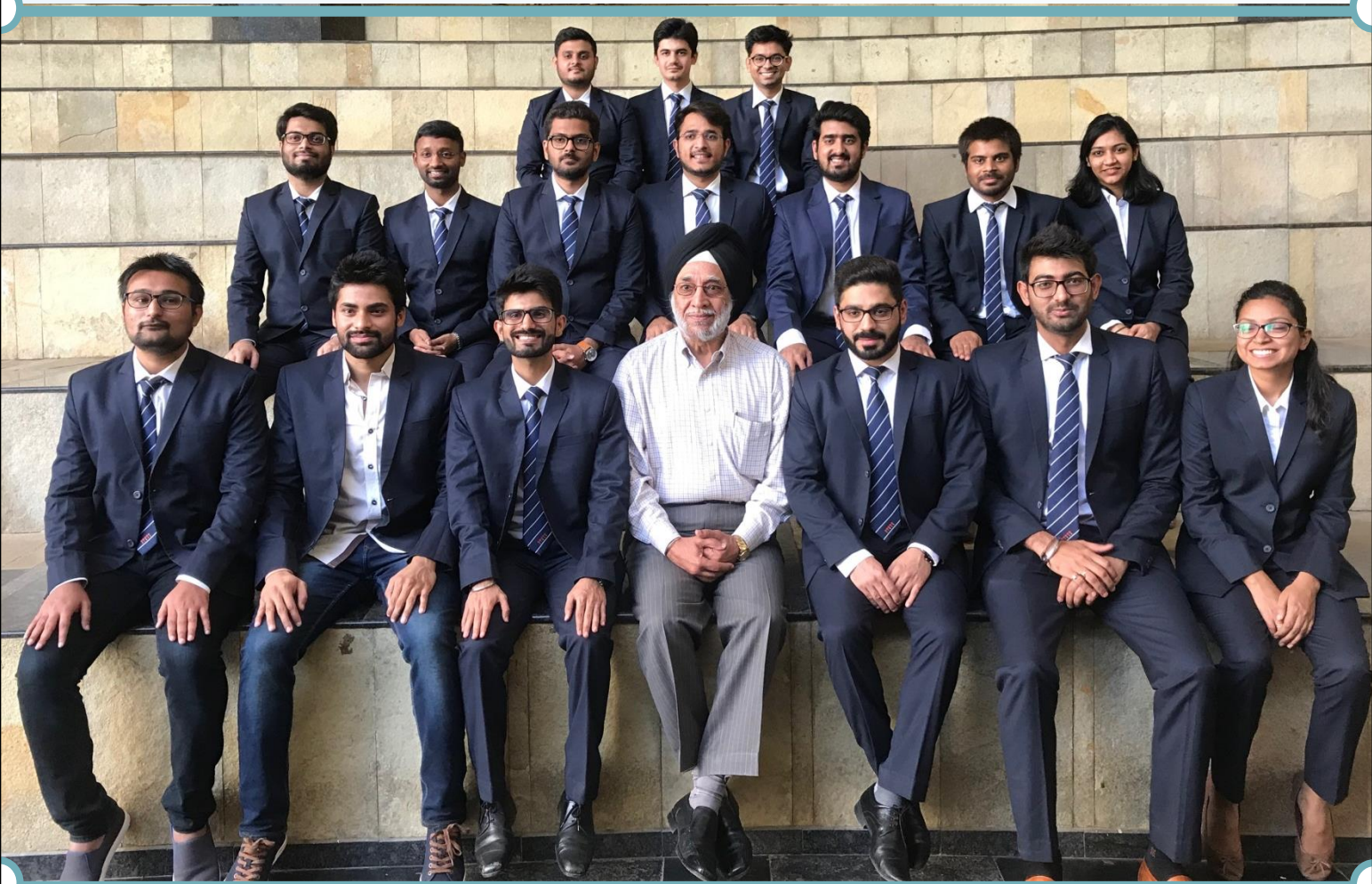
- 1. The process of deciding on the timing and use of resources within an operation
- 4. The defect is shown as the fish's head, facing to the right, with the causes extending to the left as fishbones
- 5. The period of time elapsing between when an order is placed and the order is received and is ready for use
- 6. This occurs when the machine is not efficient enough and as a result has a long queue
- 7. Specially designed platform for storage of goods to move by forklift

- Answers of OpsWords of GSCM 2018 Edition:

- | | |
|-----------------|----------------------|
| 1. Forecasting | 10. Kanban |
| 2. Pareto | 11. Group technology |
| 3. Benchmarking | 12. Pipeline |
| 4. Bullwhip | 13. Pokayoke |
| 5. Fishbone | 14. SIPOC |
| 6. Servqual | 15. Agile |
| 7. CEDAC | 16. Kaizen |
| 8. 5S | 17. ABC |
| 9. Sixsigma | |

Operations Enthusiasts @ SIMSR

“Develop an attitude of gratitude, and give thanks for everything that happens to you, knowing that every step forward is a step toward achieving something bigger and better than your current situation.” - Brian Tracy



Dr. J S Lamba (Faculty In-Charge at FORSE and Professor & Head of Operations Department) **with** Students of Operations Management (Batch: 2017-19) at SIMSR

We at **FORSE** wish them all the best for their future.

TEAM MOMENTUM



"Unity is strength... when there is **teamwork** and **collaboration**, wonderful things can be **achieved**." - *Mattie Stepanek*

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