

A Study on The Impact of Technology and Recent Advances in Logistics Industry

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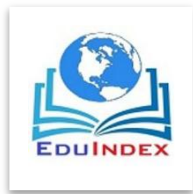
Abstract

As far as any business industry is concerned, Logistics plays a significantly important role for its success. Logistics may be defined as the process of managing the flow of activities, materials or information from the point of origin, i.e., the supplier, through processing, i.e., the manufacturing unit, and finally to the point of consumption, i.e., the customer, to encounter the necessities of the customer. In other words, logistics management means satisfying the customer need through coordinated and integrated process. Technology has made a massive impact on the operation of logistic industry. Advanced technologies have benefitted industry by increased productivity with minimizing cost and error. This paper studies the impact of technology on the logistics industry and the recent advancements that are implemented in the logistic industry for its efficient and effective operation.

Keywords: Logistics; Significantly; Flow; Origin; Processing; Consumption; Satisfying; Technology; Advancement.

INTRODUCTION

The term logistics came from Greek word “logistike” which means the art of calculating. However, Oxford Dictionary defines logistics as a term originated from Military, where it was utilized to portray the exercises identified with the procurement of ammo, and fundamental supplies for troops



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situated at the front. Logistics is just not associated with the physical movements of goods yet in addition manages the relationship with the supplier and the customers and also manages the flow of information from the point of source to the point of consumption.

Internet and ICT today presents innovation changes that is impacting all our life and will have enormous ramifications for the matter of logistics. By embedding technology throughout the organization, companies can enjoy unprecedented visibility into operation, empowering new sources of value. Visibility in turn will transform the decision making and operations of logistics, including about how goods are stored, scrutinized, services and finally delivered to customers, and also decisions on safety practices and operational health are changed.

Over the past few decades the role of logistics in organizations have undergone a drastic change. The level of certain specific patterns is raised in the conduct of business. Logistics continues to grow with the increase in competition, individualization of market, innovation and so on and also has become a strategic resource that requires certain level of staffs with in-depth knowledge.

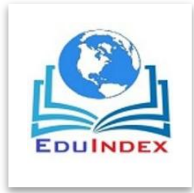
The technological blast found in the twentieth century has hurled the whole logistics industry into new heights. Organizations with new technology abilities are now ruling the industry. Today as far as logistics industry is concerned, technology is transforming into a key driver of an organization's success, competitive edge, and development.

The essential objective of technological advancement in organization is to make business activities not so much costly but rather more productive. This is especially the situation in the logistics field, where limit is short, labour is scarce, and client requests are more stringent than before. There have just been enormous enhancements made in the logistics business and things will only progress as modernization keeps on developing. This paper studies the impact of technology and the recent advancements in logistics industry.

OBJECTIVE OF THE STUDY

The main objectives of the study are:

- To identify the recent advancement in logistics industry.
- To study the impact of Information technology on the performance of logistics operation.



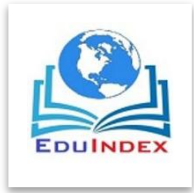
SIGNIFICANCE OF THE STUDY

This study helps the reader, that is the logistics firm owner and manager, academicians and so on to know about the recent advancements in the logistics industry and also helps them understand the impact of information technology on the performance of the logistics business and thus can make strategic decisions about the use the information technology in the organization's business operation.

REVIEW OF LITERATURE

New innovation in the production network can help improve supply chain deftness, control up activity, lessen process duration, accomplish higher proficiency and convey items to client on time whenever executed effectively. It is likewise to ensure new arrangement coordinate with existing advancements and procedures significant. Coordinating new innovation into existing activities can help a great deal in expanding client care, lessen costs, and streamline supply chains. The new innovation must fit into existing strategies, practices and individuals and use to it full power. The subject "Data Technology commitment to association's execution" has been in the focal point of research for more than three decades, and a plenty of research has been directed to comprehend and assess the connection between IT venture and authoritative execution.

The continuous dissemination of new Information Communication Innovation (ICT) and e-business advances among firms is a current case of the elements of mechanical change and financial advancement (Koellinger, 2006). IT can have a huge effect on the portability of individuals and products; IT is possibly significant empowering agent of progress in social and hierarchical practices, along these lines influencing the interest for transport in spatial and transient terms. Innovative patterns will meet the interest for solace, security and speed through advances in IT in the field of telemetric (Capgemini, 2008). This spreads frameworks for traffic and transport the executives, travel data and reservations, vehicle direction, and versatility cards. In the course of the last scarcely any years, firms working in the vehicle and logistics area have gained huge ground in their reception of new advances, especially those connected to the web and ebusiness (Koellinger, 2006).

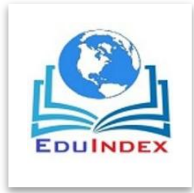


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Its dispersal has influenced the aggressive situation of the outsider logistics (3PL) industry lately adding to change the store network job of Third-Party Logistics (3PLs) essentially. Logistics administration organizations play a more significant capacity than in the past to the extent that they are depended with the assignment of coordinating and quickening physical also, data streams at various degrees of the store network (Kenneth and Laudon, 2007). This new inventory network job of 3PLs has stressed the need to quantify their presentation. There has been minimal exact research concentrated on 3PLs execution estimation, particularly so as to structure 3PIs for the assessment of significant worth included administrations. What's more, its effect on logistics administration organizations has enhanced the challenges in estimating execution, as it is especially difficult to recognize the explicit commitment of IT in producing prevalent organization execution (Kenneth and Laudon, 2007).

Due to development of data innovation, numerous organizations have received its application in their business procedures to improve operational greatness. Explicitly logistics firms have not been deserted in applying IT in their business forms (Cooper and Schindler, 2013). The Information Technology Association of America (ITAA) just like the examination, structure, advancement, usage support, has characterized data innovation and additionally the board of any PC based data frameworks (Kenneth and Laudon, 2007). This relates specially to programming applications and PC equipment. Data innovation manages utilizing electronic, PCs and programming to change over, store, ensure, process, recover with security or transmit any data (Kenneth and Laudon, 2007).

Information innovation is concerned with enhancements in an assortment of human and hierarchical critical thinking attempts through the structure, advancement, and utilization of mechanically based frameworks and procedures that improve the productivity and adequacy of data in an assortment of key, strategic and operational circumstances. In a perfect world, this is achieved through basic consideration regarding the data needs of people in critical thinking errands and in the arrangement of innovative guides, including electronic correspondence and PC based frameworks of equipment, programming and related forms. Data innovation supplements and upgrades customary designing through accentuation on the data reason for building (Capgemini, 2008).



Everything from information to executives, organizing, designing PC equipment, programming plan, database structure and the executives and organization of frameworks is remembered for the term of data innovation. When covering its parts in general, the utilization of PCs and data are regularly related. Its historical backdrop returns quite a while. So as to play out the capacities related with the field of innovation the present-day field will utilize PCs, servers, database the board frameworks and cryptography (Kenneth & Laudon, 2007).

Due to the nature of logistics firms, globalization and development of innovation, it has required the organizations to adjust IT in their activities. The utilization of IT has been related with the advantages, for example, Increased effectiveness and viable in business process, encourages sharing of data rapidly and productively by cutting down obstructions of etymological and geographic limits, it encourages less expensive, faster, and progressively productive correspondence, cost decrease thus expanded profitability, expanded working hours and spanning social hole (Capgemini, 2008). For the most part, firms that have received IT have accomplished significant levels of productivity and viability in their everyday business tasks thus improving their exhibition by increasing an upper hand, expanded productivity and expanded piece of the overall industry over their contenders (Capgemini, 2008).

RESEARCH METHODOLOGY

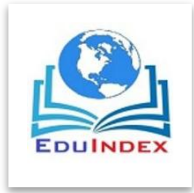
Secondary data are used in this research collected from various resources such as research articles, National and International journals, periodical reports, magazines, informative videos and websites.

RECENT ADVANCEMENTS IN LOGISTICS INDUSTRY

The recent advancements faced by logistics industry are as follows:

Blockchain Technology

The rise of blockchain technology has empowered logistics organizations to safeguard digital agreements. The utilization of this innovation permits the various partners of the logistics business,



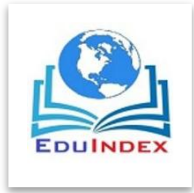
for example, makers, providers, clients, auditor, stockroom manager, and others to make a transparent and well-organized system for recording transactions, tracking resources, and dealing with all archives engaged with the logistics process. The execution of the blockchain technology is one of the most noticeable logistics trends gaining power in the worldwide blockchain innovation market in transportation and logistics industry as it can build the efficiency and transparency of supply chain and is relied upon to affect positively everything from warehousing to distribution.

Digitalization

With digitalization moulding practically every business organizations over the globe, logistics industry is no exemption. Rising computerized proficiency and buyer mindfulness about the utilization of various online stages for settling on personalized purchasing choices, the digitalization of the logistics business has developed as the key trend. The utilization of digitization in the logistics business is additionally expected to achieve huge decrease in procurement and inventory network costs while giving an extensive boost to the general incomes. The integration of digital channels in the logistics organization is another logistics trends, allowing the logistics service providers to offer transparency to the customers while improving solutions for increased safety and efficiency.

Emergence of 3PL and 5PL

The propagation of the third-party logistics (3pl) and fifth party logistics (5pl) is forecasted to accelerate the market of global logistics during that period. During the 2017, the highest to the global logistics market share was able contributed by 3pl. 3pl is also accountable for the encircle a wide range of logistics needs including transporting goods, maintaining inventory logs and travel insurance, and offering a shield against property loss and end to end transport .Furthermore, according to Amazon's express delivery market, 3PL is one of those advancements in supply chain outsourcing, which provides decreased procurement expenses as well as reduced delivery times. The adoption of 5pl has been rapidly increased in the global supply chain market due to the rising complexities, wherein the vendors of the 5pl solutions often connects to E-businesses to achieve minimum cost targets.



Efficient Last Mile Deliveries

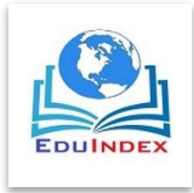
With the persistently expanding multiplication of web-based business organizations, the arrangement of effective last mile deliveries is seeing a significant rise to get one of the most basic part of making separation of administrations among the contenders. Besides, getting a bundle around the same time of deliveries is practically normal in the present days, bringing about the development of the same day delivery market in the US. Organizations are additionally seeing a more prominent accentuation on including same day delivery choices crosswise over enterprises including pharmaceuticals and nourishment and drinks. Besides, alongside that day delivery, the buyers are additionally anticipating a more elevated level of administrations while empowering huge retailers including Walmart and Amazon to include DIY last mile delivery divisions in their own organizations as opposed to outsourcing. Thusly, the persistent efforts of logistics organizations to offer productive last mile deliveries is another logistics patterns expected to offer promising logistics market's development during the anticipated period. The requirement for getting the requests directly as well as impeccable will likewise enable organizations to offer extreme consumer loyalty.

Integration of Drones and Smart Glasses

The rising mix of automatons, drones and smart glasses in the logistics business has improved the adaptability and speed of delivery, thus, affecting the development of last mile logistics showcase during the anticipated period. Self-driving vehicles, self-ruling vehicles and trucks have had the option to keep up high unwavering quality and same-day delivery in both urban and country regions. Moreover, mix with shrewd glasses upheld by enlarged reality will make deliveries in the transportation and logistics industry a lot simpler by without hands course look, face recognition for blunder free deliveries and customized deliveries. The adoption of AI incorporated smart glasses will expand the operational proficiency of first and last mile logistics alongside adaptability and speed of delivery.

Adoption of Data Analytics and Big Data Logistics

The utilization of Big Data and Data Analytics in the logistics business is permitting a few stakeholders associated with the business to settle on educated purchase decisions. Organizations are



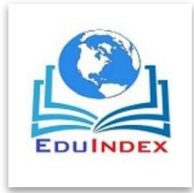
presently utilizing Big Data to foresee occupied periods; potential future stock lack and different bits of knowledge for settling on vital choices to improve their market positions and offer a noteworthy upper hand over different partners. Besides, according to the Council of Supply Chain Management Professionals, over 90% of shippers and third party logistics firms anticipate that information driven basic leadership is incredibly urgent to production network exercises as the big data improves quality and execution by offering powerful organic market estimate, stock administration, course enhancement, and effective work the executives, thusly, boosting the development of the worldwide outsider logistics market during the anticipated period.

Logistics Automation and IoT

Automation is gaining traction in the logistics business also with the continuous implementation of Internet of Things (IoT). The origin of logistics 4.0 is one of the key logistics patterns changing the worldwide store network advertise. Inadequacies including transportation delays, administrator blunders, poor observing of freight, obsolete IT disappointments, and burglaries are being overwhelmed by the reconciliation of IoT in the logistics business. Moreover, this up and coming age of effective store network the executives is relied upon to use IoT and edge figuring for yielding constant mechanized bits of knowledge. For example, US-based Union Pacific has acquainted an IoT-based framework with foresee gear disappointments and decrease crash hazards by utilizing visual and acoustic sensors on tracks. Such rising appropriation of logistics mechanization and IoT has supported the development of associated logistics.

Logistics Safety Becomes the Topmost Priority

With more noteworthy network to the web, there have been rising worries among the organizations relating the cybersecurity and logistics security. Moreover, the security of buyers' private information is another key concern making the wellbeing of logistics arrangements as one of the highest needs. Consistent hacks into the sites of internet business organizations including Amazon, Walmart and others have uncovered potential digital security dangers. This has additionally urged logistics suppliers to concentrate more on offering secure logistics arrangements. As indicated FedEx and International Post Corporation are utilizing innovations like programmed ID and information



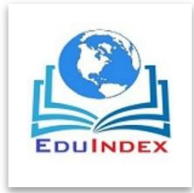
catch (AIDC) for monitoring the shipments continuously, thusly, coming about the market to enlist a CAGR near 7% by 2022.

Elastic Logistics

Flexible logistics is relied upon to rise as the most recent trendy expression in the logistics and inventory network industry. It essentially refers to the adaptability of extending and contracting capacities for lining up with the requests inside the store network during a time period. The utilization of flexible logistics is one the most recent logistics drifts that can help organizations over the globe by upgrading client experience, giving deftness and versatility, including continuous perceivability, and interfacing all business forms. The changing interest and variances in orders are being taken care of by the 3PL organizations by making their activities much flexible for arranging the limit as per the necessity.

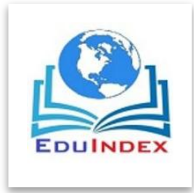
Implementation of Chatbots and Collaborative Robots (Cobots)

Execution of Chatbots According to the Logistics Bureau, the utilization of voice-controlled chatbots for associating with clients to perform explicit activities at a few buy focuses in a production network including shopping, requesting, picking and others are required to slant constantly in the global logistics advertise. Moreover, robotics is additionally set to upset the logistics business with e-commerce giants including Amazon taking part in the expanded advancement of logistics robots for a few capacities in stockrooms including bundling, putting away, and picking. What's more, different players in the market are utilizing the commencement of shared robots or cobots which will be utilized for successful request satisfaction warehousing and delivery activities. Thus, the ascent of Robots-as-a-Service (RaaS) membership plan of action will permit retailers, outsider logistics firms, and online business locales to utilize robots for tending to their satisfaction needs, thus, coming about the worldwide logistics robots' market to observe noteworthy development all through the anticipated period.



IMPACT OF INFORMATION TECHNOLOGY ON THE PERFORMANCE OF LOGISTICS OPERATIONS

- ♣ **Procurement:** During the early period procurement was done by a separate department in the organization on the basis of high quality and least price offered by the supplier. Today with the arrival of IT the e-procurement came into existence where online auctions are directed and key relations are produced with suppliers by long term agreements and contracts.
- ♣ **Planning:** Before the advent of IT, planning of organizational activities such as production, distribution, and so on are done on the basis of historical data. There was only a very little linkage with business planning and change in production with shifting interest. However, with the influx of IT, planning approaches such as collaborative planning, forecasting and replenishment all come into business operation. These approaches involve information sharing for the purpose of financial planning, inventory maintenance, safety and security and so on.
- ♣ **Web-based coordination:** The electronic collaboration application empowers to share and work together with inventory network assistants on forecast, replenishment and promotion intends to deliver the most significant level of customer service and productivity.
- ♣ **Scheduling:** Before the advent of IT, planning was done to improve resource usage and decrease producing costs. However, with the advent of IT solid linkage is set up between logistics network assistants and clients. In that capacity arrangement is done to serve the client at the precise time.
- ♣ **Inventory Management:** Earlier, each department attempted to limit the stock by moving it to the next step in the supply chain. However, with the advent of IT, procedures, for example, collaborative replenishment and vendor managed inventory were pursued, where the manufacturer's liability to replenish the wholesaler inventory, bringing about stock control and access to information about demand.
- ♣ **Logistics and Warehouse Management:** In the early time frame logistics was increasingly manual intensive and there was zero ability to see of the development and movement of the goods. However, because of the advent of IT, technologies like RFID and GPS made



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complete visibility of the movement of the goods resulting in efficient management of logistics and supply chain.

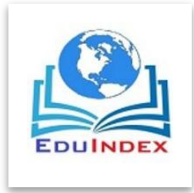
- ♣ **Customer administration** – Before, client support was just responsive. The complaints or data was hard to reach at the concerned officer and was a tedious procedure. However, due to the advent of IT, client assistance is increasingly proactive as it reaches the client easily through internet and takes feedback from them every now and then.

RECOMMENDATION

The use of internet and technology has increased, but not all organizations are adopting technologically driven business operation. Organizations in order to work efficiently and effectively has to adopt to the changes and implement technologically transformed business operations in order to serve the customers effectively and efficiently. In order to gain customer satisfaction and confidence, firms should implement right time delivery with proper invoice generation, communication and inquiry. Firms should also take steps to collect customer feedback. Also, companies should integrate their operation, suppliers and the payment system in order to perform efficiently.

CONCLUSION

Today technology is growing very fast and are transforming the whole business operations. “Technology” is considered as a vehicle to boost the competitiveness and performance of supply chain of business organisation by enhancing the efficiency and effectiveness of the logistics operation. Hence, selecting the right technology at right place for various logistics activities and other sub-activities has become a very critical task of a logistic manager in every business organization. This is very important in order to gain competitive advantage in this competitive market. Thus, every manager should be updated with the fast-growing technological advancement, and should have the capacity to adapt to the change and implement it in the business operations.



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