e-ISSN:2582-7219

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH IN SCIENCE, ENGINEERING AND TECHNOLOGY

Volume 7, Issue 12, December 2024

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 7.521

© 2024 IJMRSET | Volume 7, Issue 12, December 2024| DOI: 10.15680/IJMRSET.2024.0712026

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 7.521| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

The Impact of E-Commerce on Logistics

Sandeep Kumar, Dr. Bishwa Ranjan Kumar

NIMS University, Rajasthan, Jaipur, India

Associate Professor, NIMS University, Rajasthan, Jaipur, India

ABSTRACT: The practice of purchasing and selling goods and services online, or e-commerce, has completely changed how companies run and how customers interact with their purchases. Online retail has grown rapidly over the past 20 years, becoming a multi-trillion dollar business because to technical developments and broad internet usage. E-commerce systems remove conventional barriers like geographic restrictions, business hours, and inventory management difficulties by providing a simple, adaptable, and expandable environment for both customers and enterprises. E-commerce models have evolved to serve a diverse spectrum of customers worldwide, ranging from business-to-business (B2B) to business-to-consumer (B2C) and consumer-to-consumer (C2C). As mobile technology and social media platforms become more integrated, e-commerce is developing further, offering more individualized shopping experiences, improved customer service, and smooth transactions. Online purchasing is also becoming more dynamic and immersive thanks to advancements like augmented reality (AR), machine learning, and artificial intelligence (AI). Additionally, e-commerce fosters the development of digital payment systems, which provide quick, easy, and safe ways to conduct financial transactions, increasing customer trust in online buying. Notwithstanding the many advantages, e-commerce's growth presents a number of problems, including fraud, cybersecurity issues, logistical hurdles, and the environmental effects of shipping and packing. Furthermore, there is now more rivalry in the e-commerce sector, with both well-known behemoths like Amazon and up-and-coming entrepreneurs vying for customers' attention. E-commerce will continue to be a vital component of the global economy as it develops and grows, requiring constant innovation, regulation, and adaptation on the part of both companies and legislators to meet new opportunities and difficulties in this fast-paced industry.

I. INTRODUCTION

1.1) Background and overview of E-Commerce

Artificial Intelligence (AI):

1. In the latter half of the 20th century, e-commerce—the purchasing and selling of products and services via digital platforms—became a revolutionary force. E-commerce, which has its roots in secure online transactions and electronic data interchange (EDI), has expanded rapidly in tandem with internet accessibility and technological improvements. Businesses such as Amazon, Alibaba, and eBay are prime examples of the industry's quick development from basic online shops to intricate international markets.

2. Logistics is essential to making e-commerce possible. Meeting consumer demands for speed and convenience requires effective last-mile delivery, warehousing, inventory control, and transportation. Logistics systems must change to accommodate increased volumes, dispersed orders, and a need for real-time tracking and responsiveness as e-commerce expands.

3. From simple electronic data transfers to complex international marketplaces, e-commerce has its origins in the early days of the internet. Innovative businesses like Amazon and eBay revolutionized the way people shop by allowing them to peruse and buy goods from the convenience of their homes. E-commerce has been further improved over the years by technological breakthroughs like blockchain, AI, and mobile apps, which have made it more accessible, effective, and highly customized.

4. Logistics, as the enabler of e-commerce, has undergone a parallel transformation. Traditionally designed for bulk transportation and retail distribution, logistics systems now focus on small, fragmented shipments delivered directly to consumers' doorsteps. This shift has redefined supply chain management, emphasizing agility, accuracy, and sustainability. E-commerce has also introduced new logistical challenges, such as reverse logistics for returns, last-mile

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 7.521| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

delivery, and demand fluctuations during peak seasons.

5. By facilitating transactions through digital platforms that cut across time and location barriers, e-commerce has completely changed how companies and customers engage. Electronic data interchange (EDI), which established the foundation for digital transactions in the 1960s, is where e-commerce got its start. Online commerce has grown exponentially over the decades due to advancements like mobile technologies, internet proliferation, and secure payment gateways.

6. Companies like Amazon, Alibaba, and Flipkart dominate the e-commerce market today, but there are also a ton of small and medium-sized businesses (SMEs) that use Shopify and Etsy. The industry includes a variety of business-to-business (B2B), business-to-consumer (B2C), consumer-to-consumer (C2C), and direct-to-consumer (D2C) formats. Because of this diversity, logistics now face particular challenges that need for specialized solutions to handle the intricacies of inventory control, order processing, and effective product delivery.

7. Because e-commerce is fragmented and decentralized, logistics, which has historically concentrated on bulk movement and centralized supply chains, has had to change. Logistics companies have incorporated technology like blockchain, robotics, and artificial intelligence (AI) to increase service quality and streamline operations in response to consumer demands for faster delivery and more transparency.

8. Internet advent: The early 1990s saw the commercialization of the internet, which changed everything. Tim Berners-Lee created the World Wide Web, which offered a graphical and intuitive interface for interacting with online material.

9. First internet Transactions: In 1994, a CD was bought using encryption software, marking one of the first safe internet transactions. Many people consider this turning point to be the origin of internet buying.

10. E-commerce Pioneers: Businesses such as eBay (which began as an online auction platform in 1995) and Amazon (which was established in 1994 as an online bookshop) were early adopters that set the foundation for contemporary e-commerce.

11. Growth of E-Commerce Platforms: In the 2000s, specialized platforms such as Alibaba, Shopify, and Magento expanded, enabling companies of all sizes to create an online presence.

12. M-Commerce: Mobile commerce (m-commerce) was made possible by the widespread usage of smartphones and mobile internet connectivity in the middle of the 2000s, which allowed consumers to purchase whenever and wherever they wanted.

13. Better Payment Systems: PayPal and other digital wallets made online payments easier and safer, which increased consumer trust in e-commerce.

14. Electronic Data Interchange (EDI): The concept of EDI emerged in the 1960s, enabling businesses to electronically exchange standardized documents such as purchase orders and invoices. This innovation reduced manual paperwork and improved transaction efficiency.

15. Teleshopping: Teleshopping systems were introduced in the 1970s, enabling customers to use television networks to shop from databases that resembled catalogs. The future possibilities of remote commerce were alluded to by these early trials.

16. Early Secure Transactions: Safer financial transactions, a crucial need for the expansion of e-commerce, were made possible in the 1980s by the development of technology such as encryption and secure electronic fund transfers.

17. Global Marketplace: Cross-border e-commerce expanded significantly, facilitated by advancements in logistics, payment processing, and translation technologies.

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 7.521| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

1.2) Need and significance of the study

Technological Advancements:

Blockchain, robotics, and artificial intelligence (AI) are revolutionizing logistics. Businesses hoping to stay competitive must comprehend these technologies.

Evolving Consumer Expectations:

Shoppers demand same-day or next-day delivery, free shipping, and hassle-free returns, creating pressure on logistics providers.

Environmental Concerns:

The environmental impact of increased delivery services, including carbon emissions and packaging waste, has brought sustainability into focus.

Evolving Consumer Expectations:

Shoppers demand same-day or next-day delivery, free shipping, and hassle-free returns, creating pressure on logistics providers.

Globalization:

Cross-border e-commerce necessitates robust international logistics networks, presenting challenges in customs, regulations, and delivery.

Economic Impact:

The logistics sector is a major economic contributor, and its optimization has a direct influence on business profitability and customer satisfaction.

Increasing Customer Expectations:

Customers now anticipate a smooth order-to-delivery process and quicker deliveries, frequently within hours. It takes a thorough understanding of contemporary logistics techniques to meet these demands.

Technological Disruptions:

Logistics is changing as a result of innovations like drones, driverless delivery cars, and AI-powered inventory systems. The study investigates the successful use of various technologies.

Economic Contributions:

The logistics industry is essential to e-commerce and international trade. Stakeholders can fix operational inefficiencies and take advantage of economic opportunities by comprehending its evolution.

Policy and Regulation:

Governments and international organizations are introducing policies to manage the impact of e-commerce on logistics infrastructure, making it essential to understand compliance requirements and their implications.

Sustainability and Environmental Impact:

The surge in e-commerce has led to increased packaging waste and carbon emissions. This research investigates sustainable logistics practices that can mitigate these effects.

Technological Integration:

New technologies like as drones, driverless cars, and AI-powered systems are changing logistics, and their use and efficacy need to be studied.

Environmental Challenges:

The surge in deliveries has increased carbon emissions, packaging waste, and congestion, making sustainability a critical focus area.

Economic Impact: E-commerce logistics contributes significantly to global GDP and employment, highlighting its economic importance.

Policy and Regulation: Governments and international bodies are introducing regulations to address the environmental and infrastructural impacts of e-commerce logistics.

Operational Complexities: From managing last-mile deliveries to addressing reverse logistics, businesses face challenges that demand new operational frameworks.

1.3) STATEMENT OF PROBLEM

E-commerce's explosive expansion has changed the worldwide retail scene, but it has also presented the logistics industry with serious difficulties.A vital part of e-commerce, logistics must now change to satisfy the growing demands for sustainability, cost-effectiveness, speed, and efficiency.The fragmented, dynamic, and customer-focused nature of e-commerce operations frequently makes traditional logistics systems inadequate, as they were created for bulk shipping and static supply chains.This part explores the complexities and ramifications of the main issues that serve as

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 7.521| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

the foundation for this study.

1. Last-Mile Delivery Challenges

Last-mile delivery, the process of transporting goods from a distribution center to the end customer, is one of the most expensive and logistically complex aspects of e-commerce. Key issues include:

- **High Costs:** Last-mile delivery often accounts for up to 53% of total shipping costs due to the inefficiencies of delivering individual packages to multiple locations.
- **Urban Congestion:** Increased delivery traffic in cities exacerbates congestion, leading to delays and inefficiencies.
- **Rural Accessibility:** Delivering to remote or rural areas is costly and time-consuming, often requiring additional resources.
- **Consumer Expectations:** Customers expect fast (often same-day) and free delivery, putting pressure on logistics providers to optimize routes and operations.

2. Scalability and Peak Demand Management

E-commerce is characterized by fluctuating demand, with peaks occurring during holidays, sales events, and promotional campaigns. These fluctuations create significant challenges:

- **Operational Strain:** Logistics providers must scale their operations quickly to handle spikes in demand, often leading to resource shortages and service disruptions.
- **Inventory Imbalances:** Ensuring that sufficient stock is available at the right location during peak times requires advanced forecasting and agile supply chain management.
- **Delivery Delays:** The inability to scale effectively can result in delayed shipments and dissatisfied customers during critical shopping periods.

3. Reverse Logistics Complexity

E-commerce has seen a surge in product returns due to generous return policies and the inability of customers to physically inspect items before purchase. Reverse logistics, the process of managing these returns, poses significant challenges:

- **Cost Implications:** Processing returns is costly, involving transportation, inspection, restocking, or disposal of returned goods.
- **Operational Inefficiency:** Traditional logistics systems are often not designed for reverse flows, leading to delays and added complexity.
- **Environmental Impact:** The additional transportation and waste generated by returns contribute to the carbon footprint of e-commerce.

4. Sustainability and Environmental Concerns

The environmental impact of e-commerce logistics has become a major issue, particularly as consumers and policymakers demand greener practices:

- **Increased Carbon Emissions:** The growth of last-mile delivery and express shipping options has led to higher emissions from transportation.
- **Packaging Waste:** The widespread use of single-use packaging materials adds to environmental degradation.
- **Resource Intensity:** The fragmented nature of e-commerce deliveries consumes more fuel and energy compared to traditional bulk shipments.

5. Technological Integration and Disparities

Technology is a cornerstone of modern logistics, but its uneven adoption presents challenges:

- **Implementation Costs:** Small and medium-sized enterprises (SMEs) often lack the financial resources to invest in advanced technologies such as AI, robotics, and IoT.
- **Operational Complexity:** Integrating new technologies into existing systems requires significant training, infrastructure upgrades, and change management.
- **Uneven Development:** Developing regions may lag in adopting technology, leading to disparities in logistics efficiency and service quality.

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 7.521| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

1.4) SCOPE OF THE STUDY

1). Operational Changes in Logistics

- **Order fulfillment:** Examining how inventory management systems, demand forecasting, and automated fulfillment centers contribute to satisfying customer expectations.
- **Warehousing Evolution:** Examining how, in order to provide speedier delivery, warehousing has moved from centralized models to decentralized systems.
- **Transportation and Delivery:** Examining how transportation networks are evolving and how new delivery technologies like robots, drones, and gig economy couriers are emerging.

2). Role of Technology in Logistics

- **Automation:** The use of robotics in packing, sorting, and warehousing to boost productivity and cut expenses.
- **Artificial intelligence (AI):** The application of AI to real-time decision-making, demand forecasting, and route optimization.
- **Blockchain:** Examining how blockchain technology might improve supply chain security and transparency.
- **Internet of Things:** Researching IoT applications in predictive maintenance, fleet management, and real-time tracking.

3). Last-Mile Delivery Innovations

- **Delivery Models:** Evaluating novel strategies like parcel locker systems and crowdsourced deliveries against more conventional delivery models. Challenges include resolving rural accessibility issues, high delivery costs, and urban congestion.
- **Technological Integration:** Evaluating how drones, driverless cars, and artificial intelligence can improve last-mile delivery efficiency.

4). Reverse Logistics

- Process Efficiency: Analyzing methods to make the process of collecting, inspecting, and replenishing returned items more efficient.
- Environmental Impact: Examining the ways in which profits lead to resource usage and waste.
- Cost Implications: Examining the financial strain incurred by reverse logistics and suggesting economical fixes.

5). Sustainability in Logistics

- **Green logistics practices:** include assessing the use of alternative fuels, electric cars, and energy-efficient storage.
- **Packaging Innovations:** Evaluating initiatives to use biodegradable and reusable materials to cut down on packaging waste.
- **Carbon Footprint Reduction:** Examining projects like carbon-neutral shipping that aim to offset emissions.

1.5) LIMITATIONS

Dynamic Nature of E-Commerce and Logistics

- **Quick Evolution:** The logistics and e-commerce sectors are characterized by quick change and ongoing innovation. Some of the results of this study may soon become outdated due to new advancements in technologies like AI, drones, and driverless cars.
- **Emerging Trends:** Some of these trends, such urban logistics hubs and hyperlocal delivery models, are still in their early stages and do not yet have enough data to be thoroughly examined.

Data Accessibility and Reliability

- **Proprietary Information:** A lot of e-commerce and logistics firms keep operational data and proprietary technologies under strict confidentiality, which makes it difficult to get in-depth information about their tactics.
- **Inconsistent Reporting:** Differences in reporting requirements between businesses and geographical areas may have an impact on secondary data's dependability, resulting in inconsistent comparisons and analyses.
- **Limitations of the Survey:** The complete range of logistics techniques around the world might not be fully captured by primary data collection methods like surveys or interviews with professionals in the field.

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 7.521| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Focus on Large Enterprises

- **SME Representation:** A significant portion of the research and data that is currently accessible focuses on major logistics companies and e-commerce platforms (such as Amazon, Alibaba, and DHL), which may cause it to ignore the particular difficulties that small and medium-sized businesses (SMEs) experience.
- **Technological Gaps:** While big businesses can embrace innovative technologies, small and medium-sized businesses do not have the resources to do the same, leading to an understudied imbalance.

Technological Variability

- **Differing Adoption Rates:** The adoption of technologies such as blockchain, AI, and IoT varies widely among regions and companies, leading to discrepancies in the applicability of findings.
- **Long-Term Viability:** The study may not adequately address the scalability and cost-effectiveness of new technologies for smaller or less-resourced businesses.

Cross-Border and Policy Challenges

- **Regulatory Complexity:** The study may not adequately address the variety of laws, tariffs, and trade agreements that affect cross-border e-commerce logistics.
- **Policy Shifts:** Although they are hard to foresee and fully integrate, abrupt changes in environmental laws or trade policies may have a big influence on logistics plans.

II. REVIEW OF LITERATURE

1). Given its crucial position in contemporary retail and supply chain systems, the nexus between e-commerce and logistics has been the focus of much research. Research has repeatedly shown how e-commerce is changing conventional logistical methods. Fundamental insights into how the emergence of e-commerce has upended traditional supply chains—moving from centralized, business-centric models to decentralized, consumer-focused networks—were offered by Hesse and Rodrigue (2004). Their work demonstrated how logistics has developed into a vital e-commerce enabler, propelling advancements in transportation, inventory control, and warehousing. elaborated on this by pointing out the changes in operations needed to satisfy the fragmented and ever-changing demands of e-commerce, like the rise in smaller, dispersed warehouses and the growing dependence on outside logistics companies to improve service efficiency and reach.**2).** The difficulties of last-mile delivery, an essential but expensive part of e-commerce logistics, have received a lot of attention in the literature. According to Gevaers et al. (2014) and Allen et al. (2018), last-mile delivery frequently accounts for more than half of total logistics expenses, underscoring the difficulty of transporting individual packages to scattered sites. They also talked about how logistics suppliers are under tremendous pressure to meet the rising expectations of consumers for quick, dependable, and even free delivery. The employment of drones and driverless cars, locker systems, crowdsourced distribution methods, and other innovations have all been studied in an effort to overcome these issues. In contrast, Lim et al.**3).** Significant emphasis has also been paid to the growth of reverse logistics, which is fueled by lax return regulations and consumers' inability to physically inspect things before making a purchase. Reverse logistics is a crucial but underdeveloped part of supply chain management, according to Rogers and Tibben-Lembke (1999), who also noted the operational inefficiencies and financial costs related to handling returns. More recent research has examined how automation and technology might enhance the processing, recycling, or restocking of returned goods (e.g., Stock and Mulki 2009). Even with these improvements, reverse logistics is still an expensive undertaking, and its effects on the environment—such as higher carbon emissions and packaging waste—are becoming a major sustainability concern.**4).** In the literature, sustainability in e-commerce logistics has become a major topic. In order to lessen their environmental impact, logistics companies are using green practices including electric cars, alternative fuels, and energy-efficient warehouses, according to McKinnon (2016) and Crainic et al. (2018). These studies do draw attention to the trade-offs, though, including the high initial costs of adopting sustainable technologies and the difficulties in striking a balance between environmental objectives and financial feasibility. Fichter (2020) highlights how consumer preferences for eco-friendly solutions are encouraging firms to innovate in packaging and delivery systems, highlighting the role of consumer behavior in promoting sustainable practices.**5).** It has been often said that technology is essential to contemporary e-commerce logistics. The impact of digital technologies like blockchain, artificial intelligence (AI), and the Internet of Things (IoT) on improving logistics transparency, efficiency, and scalability was investigated by Wamba et al. (2017). Research by Christopher (2016) and Choi et al. (2020) shown

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 7.521| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

how AI may revolutionize real-time tracking, demand forecasting, and route planning. These studies, however, also warn against an over-reliance on technology, pointing out adoption challenges like high costs and a lack of expertise in deploying cutting-edge solutions, especially for small and medium-sized businesses (SMEs).**6).** Given the worldwide scope of e-commerce, cross-border logistics has also been the subject of much research. The difficulties of overseeing global supply chains, such as negotiating various laws, customs procedures, and exchange rate swings, were studied by Harris et al. (2015). Wang and Ng's (2021) research delves deeper into how companies use digital trade platforms and regional hubs to expedite cross-border logistics. They did, however, also highlight the ongoing difficulties in guaranteeing on-time delivery, upholding cost effectiveness, and dealing with geopolitical concerns.**7).** Even if the literature offers a thorough grasp of how logistics and e-commerce interact, there are still a lot of important gaps. The difficulties faced by SMEs and emerging economies are not sufficiently examined in the many studies that concentrate on big businesses and developed markets. Furthermore, continual research is required to solve new problems and improve logistics tactics due to the quick evolution of technology and changing consumer expectations. With an emphasis on filling up these gaps and predicting future trends, this analysis provides a solid basis for additional research into the complex and dynamic link between logistics and e-commerce. **8).** As e-commerce continues to change the global supply chain landscape, research on the relationship between e-commerce and logistics has become increasingly important. Hesse and Rodrigue (2004) were among the first to point out that a fundamental rethinking of logistics systems was required as a result of the shift from traditional brick-and-mortar retail to online purchasing. They maintained that in order to satisfy the various needs of online customers, e-commerce moves the emphasis away from centralized distribution methods and toward more dispersed and decentralized networks. This was further developed by further studies, such Mangiaracina et al. (2015), which focused on the growing significance of third-party logistics (3PL) providers and the development of hybrid logistics systems that combine online and offline channels.9). As the literature has shown, last-mile delivery is one of the biggest logistical issues in e-commerce. According to Gevaers et al. (2014), the final mile is the "most critical and expensive" part of the logistics process, with expenses making up over half of the overall cost of delivery. Their research brought to light problems like urban delivery density, traffic congestion, and logistical inefficiencies in rural areas. According to Allen et al. (2018), innovations including package lockers, crowdsourced delivery, drones, and driverless cars have all been investigated as possible remedies. These studies do, however, also highlight the operational and legal difficulties in large-scale use of such technology. Lim et al.10). Another field that has grown in importance as a result of e-commerce is reverse logistics. According to studies like Stock and Mulki (2009) and Rogers and Tibben-Lembke (1999), the reverse flow of goods—returns, repairs, and recycling—is a crucial component of e-commerce logistics. Businesses find it difficult to handle returned goods effectively due to the high rate of returns for online purchases, especially in industries like fashion and electronics. These studies illustrate the substantial expenses associated with reverse logistics, including transportation, quality inspections, and restocking, as well as its environmental effects. The incorporation of circular economy principles into reverse logistics has been the subject of more recent research by Govindan et al. (2015), which encourages sustainable activities like recycling, reusing, and responsible product disposal.11). In the context of e-commerce, sustainability in logistics has grown in importance. A thorough review of green logistics strategies, such as the use of alternative fuels, energy-efficient cars, and route planning that minimizes carbon emissions, was given by McKinnon (2016). These studies do, however, also draw attention to the financial trade-offs because adopting sustainable methods frequently necessitates a large financial outlay. The environmental effects of urban logistics, specifically the role of emissions and traffic in densely populated cities, were examined by Crainic et al. (2018). The study also emphasizes how consumer behavior, such the desire for quick shipment, increases the environmental load and makes it difficult for companies to strike a balance between sustainability and speed.**12).** Numerous studies have examined the transformative potential of technological breakthroughs, which are fundamental to the evolution of e-commerce logistics. Wamba et al. (2017) investigated how real-time tracking, increased transparency, and better decision-making are made possible by blockchain, artificial intelligence (AI), and the Internet of Things (IoT) in logistics operations. Choi et al. (2020), for example, showed how AI-powered algorithms can forecast demand and optimize delivery routes, lowering costs and increasing efficiency. These studies do, however, also recognize the obstacles to broad adoption, such as the high implementation costs of technology and the requirement for specialized knowledge, especially for SMEs. Christopher (2016) also emphasized the dangers of an over-reliance on technology, warning against weaknesses such as system failures and cyberthreats.**13).** Another crucial area of attention has been cross-border logistics, which reflects the global scope of e-commerce platforms. The difficulties of managing global supply chains were examined by Harris et al. (2015), who focused on issues such cultural differences, currency volatility, and customs laws. These studies demonstrate that although cross-border e-

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 7.521| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

commerce presents enormous prospects for market growth, it also necessitates considerable logistical modifications in order to satisfy the various operational and regulatory needs of other locations. Although Wang and Ng (2021) talked about tactics like creating regional hubs and using digital trade platforms to expedite cross-border logistics, they also pointed out that there are still issues with guaranteeing on-time delivery and reducing geopolitical risks.**14).** In order to guide future study, the literature also identifies gaps and understudied regions. For instance, the majority of the current research is on major logistics companies and e-commerce platforms, largely ignoring the particular difficulties encountered by SMEs. In a similar vein, rural logistics—especially in developing nations—remains understudied while urban logistics enjoys significant attention. Furthermore, as Fichter (2020) pointed out, additional longitudinal research is necessary to comprehend changing trends due to the dynamic nature of consumer behavior and its influence on logistics tactics.**15)**. In conclusion, the literature offers a solid basis for comprehending the many and varied ways that e-commerce affects logistics. Even though there has been a lot of progress in recognizing problems and coming up with answers, research must continue because both areas are developing so quickly. The goal of this study is to fill in the gaps in the literature and advance our knowledge of how logistics might change to meet the needs of the expanding digital economy.**16).** With research from academia and business highlighting its significant impacts on supply chain management, consumer satisfaction, and operational efficiency, e-commerce has completely changed logistics. Early studies, such those conducted by Hesse and Rodrigue (2004), emphasized how e-commerce has disrupted conventional supply chain models. They emphasized how decentralized, customer-focused logistics solutions designed to satisfy the needs of a digital marketplace have replaced centralized production and distribution networks. Logistics is becoming a key differentiator for e-commerce companies since supply chain fragmentation has forced advancements in transportation, warehousing, and inventory management.**17).** The importance of last-mile delivery, which has become one of the most costly and intricate facets of e-commerce logistics, is a recurrent issue in the literature. The difficulties of last-mile delivery, such as traffic jams, delivery hold-ups, and operational inefficiencies, were thoroughly examined by Gevaers et al. (2014). According to Allen et al. (2018), these problems are made worse by consumers' growing demands for quick, frequently same-day delivery. The authors noted that while technical advancements like drones, driverless cars, and crowdsourced delivery platforms have the potential to alleviate last-mile inefficiencies, their uptake is hindered by logistical complexity, high costs, and regulatory barriers. Lim et al. (2021) looked more closely at how consumer behavior influences last-mile delivery trends, highlighting the rising**18).** The high return rates linked to e-commerce transactions have also made the problem of reverse logistics more prominent in the literature. The operational and financial difficulties of handling reverse logistics were examined in studies like Rogers and Tibben-Lembke (1999), who pointed out that e-commerce has made these difficulties worse because of how simple returns are for customers. More recent studies by Govindan et al. (2015) and Stock and Mulki (2009) highlighted the necessity of simplified procedures to effectively handle recycling, repairs, and returns. According to Crainic et al. (2018), increasing returns result in more carbon emissions and packaging waste, which is another major environmental concern raised by reverse logistics.**19).** Another area of study has been the environmental impact of e-commerce logistics, with scholars like McKinnon (2016) looking at how companies might use sustainable practices. In order to lessen the carbon footprint of logistics operations, the study emphasized programs like electric cars, green warehouses, and efficient delivery routes. However, as Crainic et al. (2018) point out, these approaches frequently entail major trade-offs, including large initial investment costs and operational changes. Businesses must carefully manage this tension as consumer behavior, especially the desire for quick and frequent delivery, frequently clashes with sustainability objectives. **20** In the age of e-commerce, the incorporation of technology into logistics has been a revolutionary development, as demonstrated by studies conducted by Wamba et al. (2017) and Choi et al. (2020). While AI and IoT allow real-time surveillance, predictive analytics, and more intelligent decision-making, these research examined how blockchain technology improves supply chain transparency and traceability. For example, it has been demonstrated that AI-driven route optimization greatly lowers delivery costs and timeframes, and IoT devices enable real-time tracking of items while they are in transit. Christopher (2016) warned against an over-reliance on technology in spite of these developments, pointing to hazards such cybersecurity threats, implementation difficulties, and the digital divide between SMEs and large enterprises.

III. RESEARCH METHODOLOGY

3.1) STUDY OBJECTIVES

1. The research approach used to examine how e-commerce affects logistics is intended to give a thorough grasp of the potential, difficulties, and effects of e-commerce's expansion on logistics operations. In order to provide a

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 7.521| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

comprehensive analysis, this study uses a mixed-methods approach, combining qualitative and quantitative research techniques. Key stakeholders, such as logistics companies, e-commerce companies, and customers, will be surveyed and interviewed as part of the primary data collection process.

2. Diverse viewpoints on important topics like delivery time, cost, sustainability, and technology adoption are intended to be captured by these polls. Nuanced insights into new trends, operational difficulties, and creative logistical solutions will be obtained through in-depth interviews with industry professionals. A thorough analysis of previous research, industry publications, and case studies will be part of the secondary data collection process in order to place the results in the larger context of worldwide e-commerce logistics trends.
3. The goals of the study provide the investigation a clear direction and are in line with the research topic. Examining how much e-commerce has changed logistics procedures is the main goal, with a focus on sustainability, last-mile delivery, and reverse logistics. Analyzing the operational changes companies have made to satisfy the needs of e-commerce, such as using cutting-edge technologies, growing their warehouse networks, and improving supply chain efficiency, is part of this.
4. Finding the difficulties logistics companies encounter, such as exorbitant delivery fees, traffic in cities, and the effects of growing parcel numbers on the environment, is another important goal. The study also aims to assess how technology, including blockchain, artificial intelligence, and the Internet of Things, may help address these issues and spur innovation in the logistics industry. The study also intends to investigate customer expectations and how they impact logistics plans, specifically with regard to delivery flexibility, speed, and dependability.
5. Additional goals include evaluating how cross-border e-commerce affects global logistics and emphasizing issues like customs laws, geopolitical unpredictabilities, and the difficulty of overseeing transnational supply chains. Understanding the particular difficulties small and medium-sized businesses (SMEs) encounter in adjusting their logistics operations to the demands of e-commerce, as well as their approaches to overcome resource limitations, is another goal of the study.
6. Lastly, by investigating how companies may implement green logistics techniques to strike a balance between cost effectiveness and environmental responsibility, the research aims to add to the conversation on sustainability in e-commerce logistics.

Research Design

The study uses an exploratory and descriptive research approach to look into how e-commerce affects logistics. This method makes it possible to fully comprehend the complex relationships between the expansion of e-commerce and logistics activities. Exploratory components seek to identify new trends, problems, and innovations in e-commerce-driven logistics, while descriptive research aids in summarizing the current situation. The study integrates qualitative insights with quantitative data analysis through the use of a mixed-methods methodology. Semi-structured interviews and case studies involving stakeholders like e-commerce businesses, third-party logistics providers, and end users are used to collect qualitative data, while structured surveys, industry reports, and logistics companies' performance metrics are used to collect quantitative data. This combined strategy guarantees that both quantifiable effects and subtle operational changes are recorded.

Sample Methods

To find and include people who are directly active in the logistics and e-commerce industries, the study employs a purposive sample technique. Policymakers, supply chain analysts, e-commerce managers, and logistics experts are among the sample's members. By ensuring that respondents with pertinent knowledge and experience are chosen, purposeful sampling improves the validity and comprehensiveness of the results. Data is collected from a wide range of logistics companies, from specialized last-mile delivery startups to traditional suppliers making the switch to e-commerce.

3.2) Data Collection Methods

The data collection methods for this study on the impact of e-commerce on logistics encompass a combination of quantitative and qualitative techniques to ensure a comprehensive and multidimensional understanding of the topic. These methods are designed to gather detailed, reliable, and diverse data from multiple stakeholders involved in e-commerce and logistics operations.

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 7.521| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

1). Quantitative Methods

Surveys and Questionnaires

- To gather quantitative data, a structured survey is sent to a large sample of e-commerce enterprises, logistics companies, and consumers. Delivery speed, cost effectiveness, order volume, fulfillment accuracy, and customer satisfaction are among the important metrics that are the subject of the survey. E-commerce's effect on logistics performance is measured using both closed-ended and Likert-scale questions.

Secondary Data Analysis

- To find patterns and compare the performance of logistics systems before and after the rise of e-commerce, data is gathered from government publications, industry papers, and market research studies. The report is supported by an analysis of metrics like order return rates, warehouse capacity, and shipment volume.

2). Qualitative Methods

- **Interviews:** Key players, such as supply chain specialists, logistics managers, e-commerce company executives, and legislators, are interviewed in a semi-structured manner. These interviews examine issues including sustainability, last-mile delivery, and the uptake of cutting-edge technologies (such automation and artificial intelligence). The qualitative information adds context to the numerical results and reveals subtleties that surveys miss.
- **Case Studies:** Specific case studies of leading e-commerce platforms and their logistics strategies are analyzed. This includes studying the operational models of companies such as Amazon, Alibaba, and regional players. Case studies reveal best practices, innovative approaches, and areas for improvement.

3.3) Ethical Considerations

Informed Consent:

- The goals, methods, and expected results of the study are explained in detail to all study participants, including survey takers, interview subjects, and focus group participants. Consent forms are intended to make it clear that participation is completely voluntary and that people can stop at any moment without facing any consequences. In order to guarantee that participants understand their involvement in the study, consent is requested in writing.

Confidentiality and Anonymity:

- Strict confidentiality of all obtained organizational and personal data is guaranteed by the study. To avoid any privacy violations, the identity of participants are anonymised in all reports and publications. Sensitive information is protected by measures including data encryption, the use of pseudonyms, and secure storage systems, particularly when talking about operational data and competitive business practices.

3.4) Data Analysis Method

1). Qualitative Data Analysis

- **Descriptive Statistics:**

Metrics such as means, medians, percentages, and standard deviations are calculated to summarize the characteristics of the dataset. For instance, delivery times, shipping costs, and order volumes are analyzed to understand the performance trends in logistics influenced by e-commerce.

- **Inferential Statistics:**

To investigate the connections between logistics variables and e-commerce growth, methods including regression analysis, ANOVA (Analysis of Variance), and correlation analysis are used. Regression models are used, for instance, to investigate the effects of last-mile delivery improvements on customer satisfaction or the influence of growing order volumes on logistics costs.

- **Trend Analysis:**

To monitor changes in logistics operations over time, including modifications to warehousing procedures, the implementation of automation, and the expansion of last-mile delivery services, historical data from industry publications is utilized. This sheds light on the ways that logistics methods have been gradually influenced by e-commerce.

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 7.521| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

2). Quantitative Data Analysis

- **Thematic Analysis:**

To find recurrent themes, such as difficulties with last-mile delivery, the use of technology in logistics optimization, and environmental sustainability issues, interview and focus group responses are coded. In order to uncover underlying patterns and stakeholder viewpoints, themes are categorized and interpreted.

- **Content Analysis:**

To glean pertinent information regarding cutting-edge procedures, practical difficulties, and rival tactics, case studies of logistics companies and e-commerce platforms are methodically reviewed. This approach assists in identifying lessons learned from real-world instances and best practices.

- **Narrative Analysis:**

Qualitative data is synthesized into narratives that describe the experiences of logistics professionals, e-commerce managers, and customers. This approach highlights individual perspectives and contextual factors that influence logistics performance.

3.5) Use of Analytical Software

Analytical tools such as SPSS, Excel, or Python are used for quantitative data processing, while NVivo or MAXQDA is utilized for qualitative data coding and thematic analysis. These tools improve efficiency and accuracy in handling large datasets and complex relationships.

IV. FINDING

Growth in Demand for Last-Mile Delivery Services

Efficient last-mile delivery solutions are in high demand due to the explosive growth of e-commerce. Results show that consumers value prompt and dependable delivery, which forces logistics companies to embrace cutting-edge models including automated delivery systems, same-day delivery, and crowdsourced delivery. As a result, speed and convenience are now crucial differentiators in a competitive market.

Increased Adoption of Technology and Automatio

AI-powered algorithms for route optimization have lowered delivery times and transportation expenses. Dynamic route alterations are made possible by predictive and real-time data analytics, which boost on-time delivery performance and fuel efficiency. Technologies like AI-driven demand forecasting, route optimization algorithms, and warehouse automation have become widely used in e-commerce-driven logistics. Logistics companies can now manage varying demand during high seasons like holidays and sales events thanks to these technologies' increased scalability, shortened delivery times, and greater operational efficiency.

Challenges in Last-Mile Delivery

Last-mile delivery is essential, but it also comes with a lot of difficulties. These include exorbitant prices, inefficiencies brought on by traffic in cities, and logistical challenges in rural locations with inadequate infrastructure. According to the study, overcoming these obstacles calls for creative solutions like drone deliveries, electrified cars, and micro-fulfillment facilities.

Increased Pressure on Warehousing and Inventory Management

The need for strategically placed warehouses to provide quicker delivery has increased as e-commerce has grown. The results show that in order to minimize storage expenses and guarantee product availability, logistics companies are progressively implementing dynamic inventory management systems. In order to balance cost and efficiency, strategies like shared warehousing and just-in-time inventory are becoming more popular.

Environmental Impacts and Sustainability Concerns

The rise in e-commerce has increased logistics' environmental impact, especially in terms of packaging waste and delivery-related carbon emissions. According to the report, there is an increasing focus on environmentally friendly packaging, carbon-neutral delivery programs, and green logistics tactics that make use of electric and hybrid cars.

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 7.521| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Consumer Expectations and Behavior
The results show that e-commerce customers have grown more picky, anticipating real-time tracking, quicker delivery, and flexible return policies. This has forced logistics companies to enhance supply chain transparency and develop new customer-facing services.

Emergence of Third-Party Logistics (3PL) Providers
Many businesses now outsource their logistics operations to outside contractors due to the complexity of e-commerce logistics. According to research, 3PL businesses are now essential in providing specialized services like order fulfillment, warehousing, and last-mile delivery, allowing e-commerce companies to concentrate on their core strengths.

Globalization of Supply Chains
Cross-border trading has been made easier by e-commerce, which has made supply chains more international. The results show that although this development presents economic prospects, it also adds complexity in the form of trade tariffs, customs laws, and lengthier lead times, necessitating strong global logistics networks.

Impact of the COVID-19 Pandemic
According to the study, the COVID-19 epidemic has sped up e-commerce growth and put logistics infrastructures under hitherto unheard-of strain. Significant developments have resulted from this, including flexible supply chain models, contactless delivery, and the incorporation of digital platforms to handle growing order quantities.

Regional Variations in Logistics Adaptation
The adaptation of logistics operations to e-commerce is significantly influenced by geographic variances. Rapid adaptation has been made possible in industrialized countries by infrastructure support and technology improvements, whereas developing regions struggle with issues including limited access to modern technologies and infrastructure gaps.

Role of Blockchain in Enhancing Transparency
With its increased security and transparency throughout supply chains, blockchain technology is starting to revolutionize the logistics industry. According to the survey, blockchain is being tested by e-commerce companies to enhance traceability, lower fraud, and expedite customs clearance in cross-border logistics.

V. CONCLUSION

E-commerce as a Catalyst for Logistics Evolution:
A potent accelerator that is speeding up innovation in logistics techniques is e-commerce. Logistics companies have been forced to embrace cutting-edge technology like automation, artificial intelligence (AI), and blockchain in order to satisfy consumer demands for quicker deliveries, more transparency, and flexible service alternatives. These developments have increased productivity, decreased expenses, and strengthened the capacity to manage intricate supply networks. They have, meanwhile, also put more pressure on businesses to make significant investments in technology and infrastructure.

Rise of Consumer-Centric Logistics Models:
The trend toward more customized and adaptable delivery options demonstrates how the customer has a major influence on e-commerce logistics. By providing customized solutions like same-day delivery, real-time tracking, and subscription-based services, logistics companies have refocused their strategy to put the needs of their customers first. This change emphasizes how important it is to be flexible and quick to react to changing customer demands.

Challenges and Opportunities in Last-Mile Delivery:
One of the most difficult yet important parts of e-commerce logistics is still last-mile delivery. Innovative solutions are needed to address problems like urban density, road congestion, and the high cost of distribution in remote places. Both the potential for disruption and the difficulties with scalability and legal compliance are brought to light by the rise of alternative delivery methods including drone deliveries, automated lockers, and electric automobiles.

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 7.521| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Emphasis on Sustainability and Green Logistics:
E-commerce-driven logistics' effects on the environment, such as rising carbon emissions and packaging waste, have garnered a lot of attention. Businesses are starting to place a higher priority on environmentally friendly packaging and carbon-neutral delivery programs. As stakeholders react to regulatory challenges and customer demand for environmentally responsible practices, these initiatives—which are still in the early stages of development—are increasingly playing a significant role in long-term logistics strategies.

Globalization and Localization Dynamics:
Supply chains have become increasingly globalized due to e-commerce, making it easier for companies to access foreign markets. But there are also complications brought up by globalization, like handling cross-border trade, negotiating customs laws, and reducing geopolitical threats. The study also identifies a parallel trend toward localization, with the development of regional hubs and micro-fulfillment centers to effectively address the particular needs of local markets.

Role of Collaboration and Partnerships:
Stakeholder collaboration has increased as a result of the logistics industry's competitive and fragmented character. Managing the intricacies of e-commerce logistics now requires collaborative technologies, shared delivery networks, and alliances with outside logistics companies. Through these collaborations, businesses can maximize resources, take advantage of synergies, and improve the quality of their services.

Technological Transformation as a Strategic Imperative:
In the logistics industry, implementing cutting-edge technologies is now necessary for survival and expansion. Significant investments in digital transformation, ranging from blockchain for supply chain transparency to AI and machine learning for predictive analytics, have been spurred by e-commerce. In addition to increasing operational effectiveness, these technologies enable businesses to quickly adjust to shifting market conditions.

Resilience and Agility in the Post-Pandemic Era:
The necessity of robust and flexible logistics systems was highlighted by the COVID-19 pandemic. During lockdowns, e-commerce became a lifeline for both customers and enterprises, placing an unprecedented burden on logistics networks. Businesses have built more resilient and adaptable supply networks that can withstand future crises as a result of the lessons gained.

The Need for Strategic Innovation and Policy Support:
Policymakers must develop supporting regulatory frameworks and stakeholders must strategically innovate as e-commerce logistics continue to develop quickly. Governments and business leaders must collaborate to solve issues like labor shortages, infrastructural deficiencies, and regulatory obstacles while creating an atmosphere that supports sustainable growth and technological advancement.

Hyperlocalization and Customization Trends:
Hyperlocalization is a trend in the logistics sector where businesses concentrate on providing tailored solutions to smaller, localized customers. This entails establishing neighborhood fulfillment centers, working with regional delivery partners, and providing services that are appropriate for the local culture. In addition to improving delivery times, hyperlocal tactics increase client loyalty and trust across a range of geographies.

Policy and Regulatory Challenges:
Regulatory obstacles such cross-border trade limitations, data protection standards, and tax compliance concerns are brought on by the global expansion of e-commerce. To guarantee smooth operations, the logistics sector must negotiate a maze of laws and regulations. On the other side, policymakers must develop frameworks that encourage innovation while tackling issues with sustainability, consumer rights, and competitiveness.

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 7.521| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

REFERENCES

1. **Christopher, M. (2016).** *Logistics & Supply Chain Management*. Pearson Education. This book explores how supply chain management and logistics have been transformed by e-commerce, especially focusing on last-mile delivery and inventory management.
2. **Mollenkopf, D., & Stolze, H. (2016).** "The E-Commerce Logistics Opportunity: The Relationship Between Online Shopping and Logistics." *International Journal of Physical Distribution & Logistics Management*, 46(6), 545-564. This study analyzes how e-commerce is reshaping logistics operations.
3. **Büyüközkan, G., & Göçer, F. (2018).** "Digital Supply Chain Management and Logistics." *Springer.* This reference examines how digital technologies impact logistics operations and supply chains, with a special focus on e-commerce.
4. **European Commission (2020).** *Study on the Impact of E-Commerce on the Logistics Sector*. The report outlines how e-commerce affects logistics infrastructure, with a focus on European markets.
5. The Logistics of Logistics" by Mark J. Kieran
6. "E-commerce Logistics and Fulfillment: A Guide to the Logistics of e-Commerce" by Michael A. Stroh
7. Journal of Business Logistics (2021)
8. This paper provides insights into how e-commerce has disrupted traditional supply chain models, emphasizing the need for integrated systems, real-time tracking, and consumer-centric logistics.
9. **Coyle, J. J., Novack, R. A., Bardi, E. J., & Langley, C. J. (2016).** ***Supply Chain Management: A Logistics Perspective*****. Cengage Learning.**
10. **Mollenkopf, D., & Stolze, H. (2016).** "The E-Commerce Logistics Opportunity: The Relationship Between Online Shopping and Logistics." *International Journal of Physical Distribution & Logistics Management*, 46(6), 545-564.
11. **Aarabi, A., & Pahlavan, K. (2019). "Impact of E-commerce on Logistics: Implications for the Supply Chain."** ***International Journal of Supply Chain Management*****, 8(6), 267-276.**
12. **Sweeney, J., & Zaffar, M. (2018). "E-commerce and its Impact on Logistics and Transportation:** A Systematic Review." *International Journal of Advanced Logistics*, 10(4), 567-578.
13. **Mollenkopf, D., & Stolze, H. (2016). "The E-Commerce Logistics Opportunity: The Relationship Between Online Shopping and Logistics."** ***International Journal of Physical Distribution & Logistics Management*****, 46(6), 545-564.**
14. **Bask, A. H., & Tanskanen, K. (2020). "E-commerce and Logistics: The Case of Finland."** ***International Journal of Physical Distribution & Logistics Management*****, 50(6), 529-548.**
15. **Jäger, A., & Zentes, J. (2017). "E-commerce and Logistics: Emerging Trends and Challenges."** ***Business & Economics Journal*****, 8(2), 141-152.**
16. **Aarabi, A., & Pahlavan, K. (2019)**. *"Impact of E-commerce on Logistics: Implications for the Supply Chain." International Journal of Supply Chain Management, 8(6), 267-276.*
17. **Zhang, D., & Wang, Y. (2021). "The digital transformation of logistics driven by e-commerce: Implications for businesses."** ***Journal of Supply Chain Management, 57*****(2), 15-27.**

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH

IN SCIENCE, ENGINEERING AND TECHNOLOGY

| Mobile No: +91-6381907438 | Whatsapp: +91-6381907438 | ijmrset@gmail.com |

www.ijmrset.com