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Impacts of Road Accidents on Digital Commerce and E- Business in India

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Abstract

Road accidents are catastrophic phenomenon and creating a challenge worldwide. Every year millions of people suffered in road accidents. Despite all exercise many countries have an upward trend in numbers of road accidents, fatalities and serious injuries. Developing countries around the globe suffered more due to many factors such as, road network, population, awareness, number of vehicles and fitness, enforcement adequacy and emergency trauma care facilities. India is the most populated developing country having second largest road network after USA. As compared to 2022 in year 2023 number of road crashes or accidents, associated fatalities or casualties and severe injuries are significantly increased. There are noticeable socio-economic impacts of losses involved in road accidents. It is speculated that annually economic losses due to road accidents India converts significant GDP loss near about 3%.There are different types of effects of road accidents as per digital commerce and e-business are concern,. Safety of drivers, associated vehicles, damage of goods and delay in delivery is major impact of road accidents on Digital Commerce and E- Business. Therefore, Road accidents can affect the digital commerce and E- Business by supply chain disruptions or logistics, increasing operational cost and most crucial damage to reputation or brand value. Road safety or traffic safety is a global problem and included Sustainable Development Goal (SDG) by United Nation. Out of 17 SDG, two i.e. SDG 3.0 and 11.0 emphasize about road safety. SDG 3.0 reveals Good Health and Well Being while SDG 11.0 is about Sustainable cities and communities. Developing countries like India have to achieve all these goals to fulfill the requirement of target Viksit Bharat 2047. If road accidents and their severity controlled then D-commerce and E- Business will more efficiently contribute in Indian national GDP.

Keywords: *Road Accidents, Fatalities, Injuries, Digital Commerce, E- Business, Logistic, Supply Chain*

Introduction

Digital commerce, also refer E- Commerce, is the buying and selling of goods and services over the internet. It involves seamless interactions between buyers and sellers through different types of secure platforms. Major examples include Amazon, Flip Cart, Blinkit and eBay etc. E- Business signifies a business management method using IT communication, mainly Internet applications. E-business refers, among other things, to sending documents, exchanging data between a producer, distributor and trade partner, winning new customers, conquering markets, and holding teleconferences. E-business comprises all business methods in electronic forms. Road accidents are catastrophic phenomenon and the problem of accident is a very acute in highway transportation due to its complex flow pattern of vehicular traffic, presence of mixed traffic along with pedestrians and other many more road users. Accidents are multifactor and random phenomena. Traffic accident significantly leads to loss of life and property in its occurrences.

Methodology:

In this study impacts of road crashes in India over Digital Commerce and Electronic Business evaluated and analyzed with the help of data found with different sources. Experience of author and experts in the field is also included in the research. There are basically four components in this study:

1. Defining Digital Commerce and E- Business
2. Road accidents and Related Data
3. Evaluations of steps in D- Commerce and E- Business

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4. Explaining Impacts of Road Crashes
5. Reducing accidents impacts to improve businesses

D- Commerce (Digital Commerce):

Digital commerce is the online buying, selling and transaction. Complete digital commerce process cross functional flowchart is given in figure 01. There is different activity involved in this process. Starting from online shop up to shipment received there are two types of activities; first activities on line web or platform and second physical activities. Shop online, place order, second order are on online plat form. Ship product to customer and shipment received are physical activities.

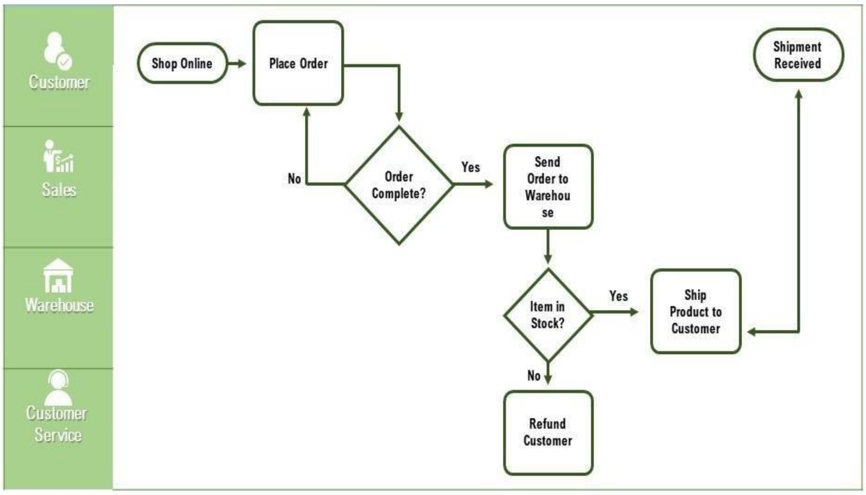

Figure 01: Digital commerce process cross functional flowchart

E- Business (Electronic Business):

E-business refers doing business activities online, such as selling, customer service, supply chain, marketing, and internal operations. E- Business differs to e- commerce or d- commerce in which just buying and selling activities including digital processes. Technologies such as websites, apps, ERP, and CRM to connect stakeholders, streamline operations, and create value, encompassing everything from online stores and digital payments to managing internal resources digitally leveraged by e-business.

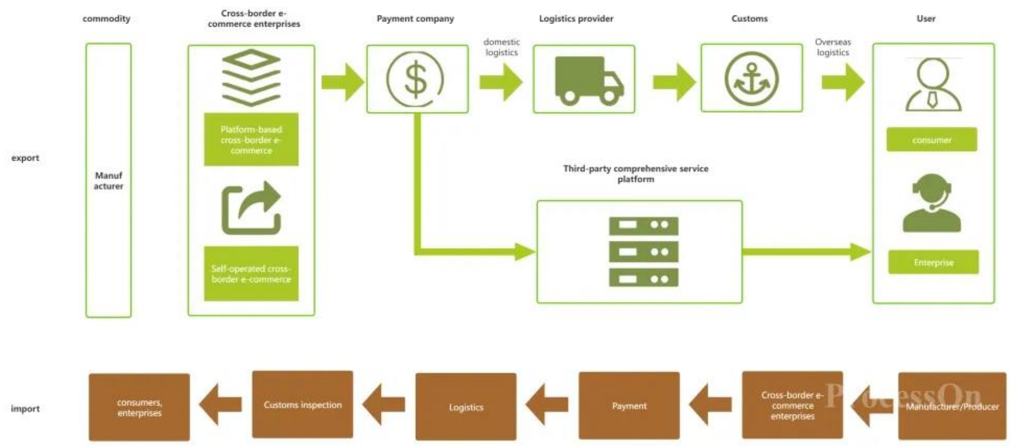

Figure 02: Cross-border e- business flow chart

Road Accidents:

Road accidents are unexpected incident on roads involving at least one vehicle in motion that result in property damage, injury, or death. Road accidents are major health and economic issue globally, costing most countries 1-3% of their GDP annually. In India Over-speeding and careless or distracted driving were found to be the two major causes of road accidents. There occurred 4,64,029 road accidents in India in 2023, with 17,261 more than in 2022, with a 1.6% increase in fatalities, from 1,71,100 in 2022 to 1,73,826 in 2023. In 2024, India recorded an all-time high in road fatalities, with over 1, 77,177 people killed in road crashes. This represents a 2.3% increase from the 1.73 lakh deaths reported in 2023 to 1.77 lakh in 2024 averaging approximately 485 deaths every day.

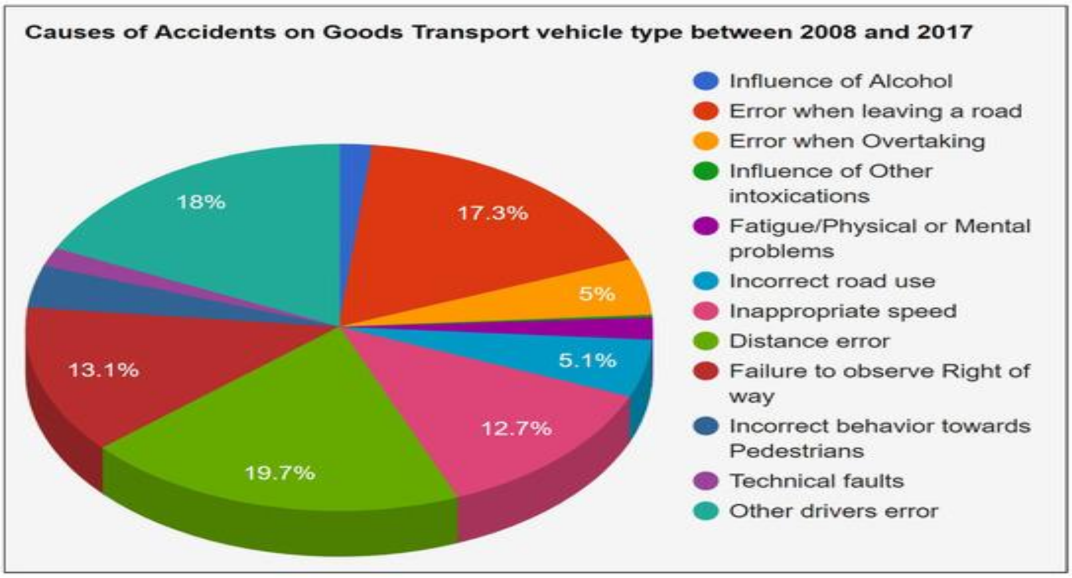

Figure 03: Major causes of road accidents that occurred in goods transport vehicles (2008–2017).

Impact of Road Accidents:

In one year India faced nearly 4, 80,000 accidents, which lead to approximateb1,88,000 deaths of people aged between 18 and 45 years.As on March 2025 India is losing near about 3% to 5% of national GDP due to approximately five lakh road accidents annually as government data and World Banks reports. If it converted in monetary terms, this reflects a loss of approximately ₹4 lakh Crores to the Indian economy each year on annual basis.

Impact on D- commerce:

Digital commerce contributing in India's retail sector is growing rapidly day by day, hovering around 7-9% of total retail sales in year 2024-2025. It speculated that digital commerce has significant potential to reach its contribution in retail sector 14-15% by 2028-2030. This is due to reason that digital commerce driven by increasing internet penetration, mobile commerce, and expansion into Tier II/III cities pan India. Different research implicated that, while still nascent compared to global leaders, India's online retail is set for substantial catch-up growth, with projections suggesting it could become a more than 100 plus billion dollars market in the coming years. Road accidents significantly affect d-commerce by causing financial losses, logistical disruptions, defaming brand value and long-term economic burdens. The increasing demand for commercial vehicles driven by e-commerce has heightened road safety problems, leading to severe consequences for the digital supply chain.

Impact on E- business:

E-business in India is fastest growing and becomes fastest growing market globally. This type of boom in this market is due to adoption of internet and smart phones with lower data cost.one another reason is that this market is expanding in tier II and tier III cities also. E- Business in India is assumed its projections hitting hundreds of billions by 2030 in country. This type of growth is driven by players like Amazon, Flipkart and Meesho etc. New initiatives like Online Digital Commerce (ONDC) creating huge opportunities in Direct to Consumer (D2C), quick commerce, and various online services. India's digital economy, which includes e-business, significantly contributes to GDP, reaching nearly 12% in 2022-23 around $402 billion, with projections showing it could hit 20% by 2029-30. Outpacing other sectors through core digital services, platforms, and digitalization in traditional industries like retail, Banking, Financial Services, and Insurance (BFSI) and education e- business have much more potential to grow in India. The e-commerce sector alone, heavily reliant on MSMEs shows rapid growth, expected to exceed $160 billion by 2028, driving consumption and employment. Despite all these opportunities road accidents can affect e- business by disruption in supply chain and logistics, increasing operational cost and more dangerously defaming brand value of companies suffering in road accidents.

Conclusion:

This research paper indicates that road accidents impacts the D- Commerce and E- Business in India. It can conclude that:-

1. Road accidents in India are a severe problem and have much more negative impacts on all type of business in country.
2. Road accidents in India impacts Indian GDP negatively around 3% annually.
3. Digital commerce is online buying, selling and transaction for goods and services.
4. Electronic business E-business includes business activities online, such as buying, selling, customer service, supply chain, marketing, and internal operations.
5. D- Commerce and E- Business in India are fastest growing sectors in India having more potential to increase its share in their sectors as well National GDP.
6. Road accidents in India have impacts on D- commerce and E- business by affecting logistics, supply chain results delayed delivery.

7. Road accidents can impact E- business by increasing its operational cost due to repeated activities.
8. Road accidents results delayed delivery or service which impacts negatively reputation or brand value of company.
9. Loss of property and persons involved in D- commerce and E- business may be result of a road accidents.
10. By taking precautions and proper training of drivers and other employees in logistics or supply chain, loss can reduce.

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Conflicts of interest
The authors declare that there are no conflicts of interest regarding the publication of this paper.

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