

INTRODUCTION

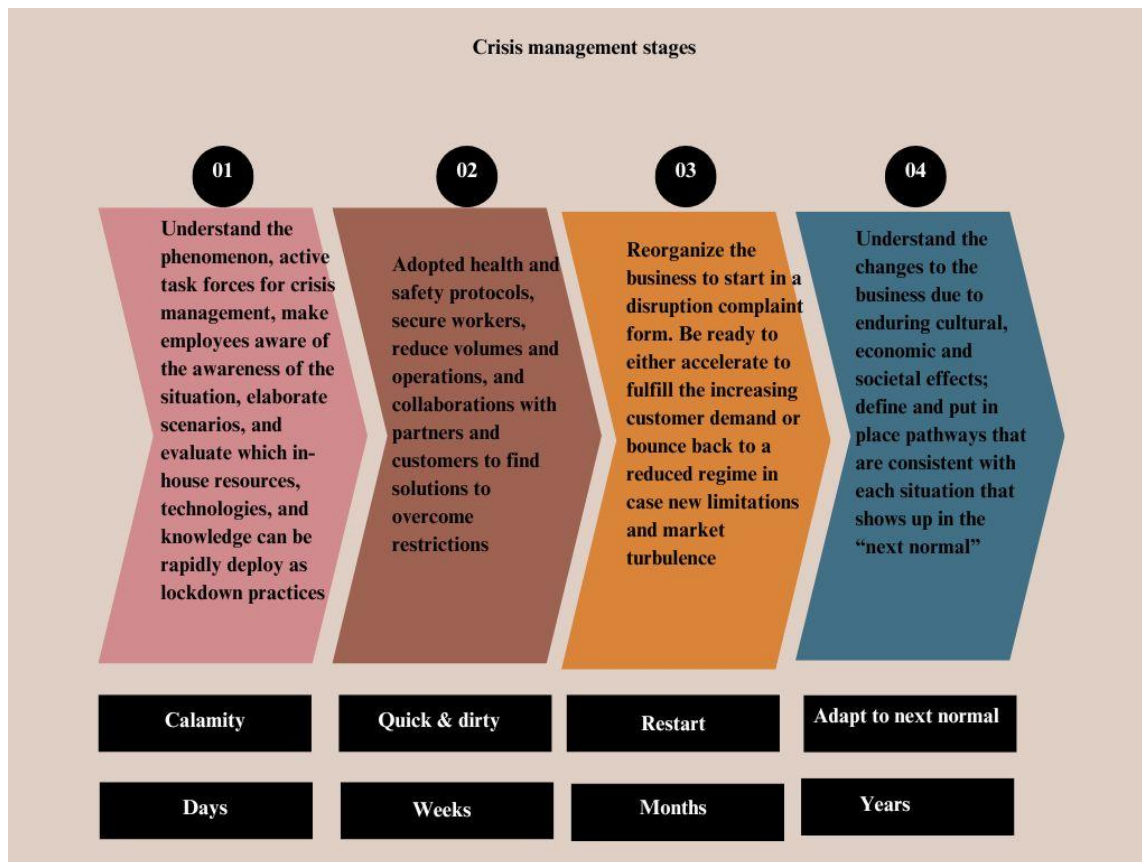
1.1 Background of the study

1.1.1 Concept of the research

Organizations are increasingly vulnerable to threats from globally disruptive events, prompting increased attention towards studies on organizational resilience. The literature identifies numerous levers to enhance resilience, yet organizations still struggle to prepare for future disruptions (Koh et al., 2024). Disruption is a threat to business organizations, causes losses, and increases the cost of operation (Cortez and Johnston, 2020). Such incidents jeopardize the profitability and existence of firms due to their significant adverse effects (Shekarian et al., 2023). Businesses encounter crises, ranging from economic recessions and industrial disasters to calamities and worldwide pandemics. Disruptions create risk and uncertainty in business and have an unfavorable effect on their business performance (Eryarsoy et al., 2022). Recent events like the Panama Canal (Miller & Clayton, 2023) and the Ukraine crisis (Nugroho et al., 2024) again necessitate the need for more resilient logistics networks that can consistently adapt to geopolitical and environmental fluctuations. A global example is the COVID-19 pandemic, caused by the novel coronavirus (SARS-CoV-2), which has had far-reaching impacts on healthcare, the economy, education, businesses, and daily life (Finsterwalder & Kuppelwieser, 2020; Kabadayi et al., 2020).

There are two phases of disruption management in management: (i) proactive strategies and (ii) reactive strategies (Mitroff et al., 1987; Chowdhury & Quaddus, 2017). The first phase includes early detection of a crisis before its occurrence and being prepared for any unforeseen disruption by focusing on restructuring of the operations; and the second stage adopts some techniques to withstand the changing environment and then repair the after-effects of disruption for restoration of everything and to enhance adaptability in the business model if required (Zhao et al., 2019). In between these phases, organizations employ resources to establish and enhance continuous and adaptable response capabilities. Organizations must participate in an ongoing learning process to attain resilience

(Eryarsoy et al., 2022). Further, the learning process of crisis management stages takes a long time and can be divided into four namely calamity, quick and dry, restart, and adapt (Figure 1.1).



Source: Adapted from Rapaccini et al, (2020)

Figure 1.1 Stages of crisis management

The world has witnessed various widespread illnesses and virus outbreaks disrupting various sectors from time to time. The diverse responses of businesses to the COVID-19 pandemic have generated an opportunity to formulate adaptive frameworks for crisis management. Addressing a crisis of this scale necessitates a diverse array of competencies, prompting firms to adopt swift actions to alleviate effects on product and service operations. With the lifting of lockdowns, managers were required to implement prompt modifications to restart operations under difficult circumstances and, in the long run, to respond to an ever-evolving environment. This corresponds with the notion of "*punctuated equilibrium*" (Tushman & Romanelli, 1985), indicating that the imminent future will be characterized by considerable volatility, necessitating continual adaptation to consecutive "*new normal*". A flexible model is an essential instrument for facilitating successful

management during any disruption or emergency, irrespective of its source (Rapaccini et al., 2020).

1.1.2 Courier industry in India

In India, the modern courier service was started during the era of the East India Company in 1685. India Post was established more than 150 years ago to boost the communications process. Indian Postal services used to be in a dominating position, but after liberalization, various international, national, and local companies have emerged and captured a major portion of the market. In the later part of the nineties, some local players like Blue Dart, Elbee, and Skypak entered the market and followed by some international players like FedEx, DHL, UPS, etc. (Varshney & Sahay, 2007). As trade and industry grew, this started taking more organized form and hence there are four categories of companies which provide courier and express services such as global integrator, large companies, regional level players, micro and small unorganized sector along with India Post which also offers express mail services along with traditional mail services (Mukherjee et al. 2010). Postal and courier services play a significant role in economic development by providing transmission of parcels/packages and communications between B2C (business to consumer), B2B (business to business), and C2C (consumer to consumer), the entire segment, i.e., individuals, government, and other organizations.

There are more than 2500 players in the courier & express industry, including the government postal department, comprising large (72%), medium (15%), and small (13%) players (CARE analysis, 2014). The larger players have wide networks and infrastructure and are present in both national and international locations. The medium players have limited regional focus. The unorganized sector is the small player with limited networks within a few cities and towns.

The Indian Express (courier) industry is one of the fastest-growing markets globally and grew at 15% CAGR (compound annual growth rate) over 5 years, and the estimated value was about INR 22,000 crore in FY17 (Deloitte, 2018). Out of this domestic market was about INR 17,000 crore, and the remaining constitutes international express, which has grown at 12% CAGR over 5 years. The express industry has grown at a CAGR of 17% and reached up to INR 43,000 crore by 2023. The courier and express industry has created a large number of employment directly or indirectly, and is expected to grow close to 2.6 million to manage the increased scale and size of the operation, and it is expected that the

industry will continue to grow at this regular pace. The growth of this sector is primarily due to the growth of e-commerce in the B2C segment, which is the largest contributor with more than 70% contribution, followed by banking and financial institutions, and other document deliveries belonging to education, government, public sectors, etc. (Deloitte, 2018). There were almost 100 million online shoppers in 2017 and crossed 120 million by 2020 (ASSOCHAM, July 12, 2018).

The courier, express, and parcel industry has gained significant importance in recent years, playing a crucial role in enabling worldwide trade and e-commerce. The efficiency and rapidity of these services have rendered them indispensable for both corporations and consumers. The COVID-19 epidemic has highlighted the increased significance of courier and express services due to disruptions in traditional supply chains. It is vital in the contemporary global corporate environment, acting as the foundation for the efficient and punctual transportation of commodities, papers, and significant packages. The role of courier and express service providers in the supply chain is extremely important, especially during times of unpredictable and unusual events like the recent pandemic.

According to the Cambridge dictionary, *“A courier is a person or company that takes messages, letters, or parcels from one person to another”*.

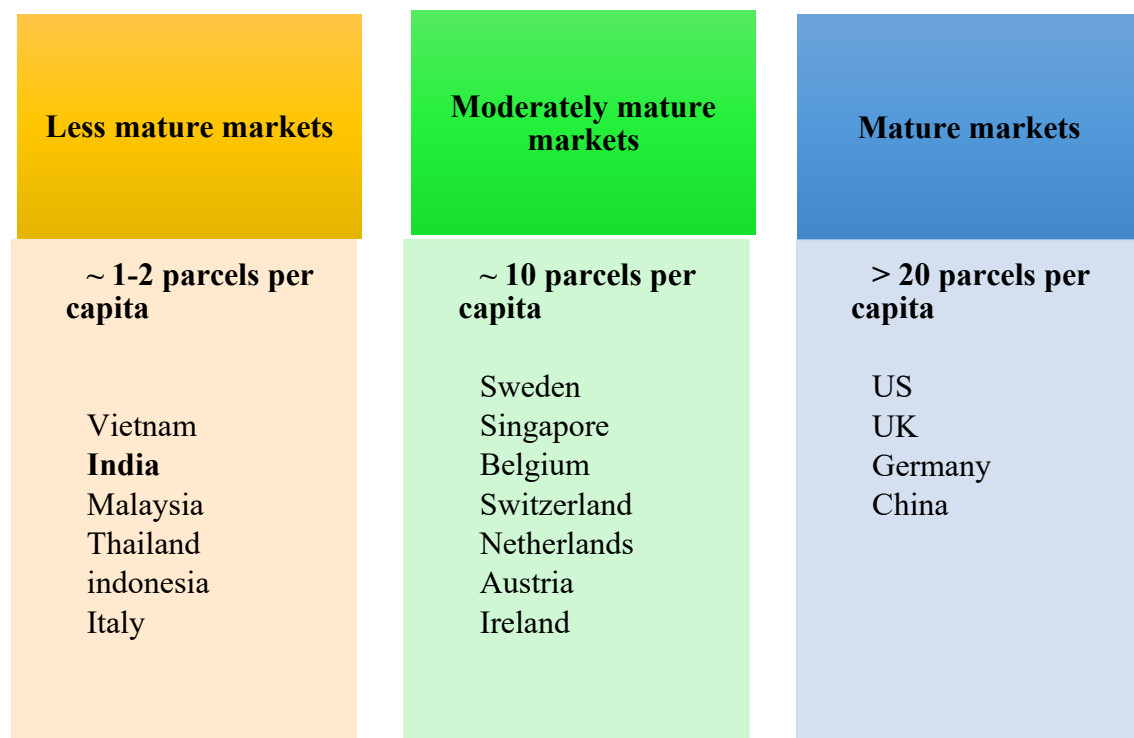
According to DHL, *“The term CEP is the abbreviation for ‘Courier, Express and Parcel Services’. It refers to postal and logistics companies that primarily transport consignments with comparatively low weight and volume, such as letters, small packages, documents, or small items”*.

According to India Post, *“Speed Post, the market leader in the domestic express industry, provides express and time-bound delivery of letters and parcels weighing up to 35kg. International Speed Post (EMS), the premium and time-bound international postal service for documents and merchandise weighing up to 35kg. Anything can be sent in a parcel except articles whose transmission is prohibited.”*

CEP services do not impose a stringent weight limit on sent items, permitting flexibility according to the service and supplier. Blue Dart Express provides a bespoke, environmentally sustainable pallet packaging solution called the Express Pallet. This packaging can handle shipments weighing between 50 kg and over 100 kg inside India, offering a flexible and economical shipping alternative. In contrast, Delhivery limits packages transported by road (Surface method) to a maximum weight of 50 kg. India Post

accepts a weight of up to 35 kgs. This variability in weight possibilities among providers demonstrates how CEP services accommodate diverse logistical requirements and limitations. Therefore, an operational definition has been developed for this study.

CEP definition for this study, *Courier, express, and parcel (CEP) market encompasses postal and logistical service providers who specialize in the transportation of small items, such as parcels and packages. It encompasses the total market size and volume of (1) shipments/parcels/packages weighing under eighty kilograms, (2) packages for business customers, including Business-to-Business (B2B) and Business-to-Consumer (B2C), as well as packages for individual customers, specifically Consumer-to-Consumer (C2C), (3) non-express parcel delivery services (standard and deferred) alongside express parcel services (day-definite express and time-definite express), and (4) both domestic and international shipments.*



Source: McKinsey 2019

Figure 1.2 CEP market across the globe

The global letter-to-parcel volume ratio dropped from 13:1 in 2005 to 4:1 in 2015, and it's expected to hit 1:1 by 2025 (McKinsey 2019). The mail-to-parcel ratio will go down from about 10:1 in 2015 to about 3:1 by 2025 in the postal sector, where it is usually higher than

the world average (McKinsey 2019). Overall market growth of parcel (CAGR) is 10%, and mail decline is 5% from 2000-25. Different countries' levels of e-commerce parcel penetration show that less developed markets offer significant development possibilities. In 2017, mature markets experienced nearly 20 parcels delivered per capita, while moderately developed markets received approximately 10, and less mature areas received merely 1 or 2 per capita (Figure 1.2). The disparity between these places is diminishing, propelled by significant changes in both demand and supply. This catch-up growth is both expected and currently in progress, significantly altering many markets. Less mature economies provide substantial growth potential, as seen by the varying e-commerce parcel delivery rates among nations. Thus, there is great scope for improvement for India as a less mature market.

Regulatory framework

The Ministry of Communications in India, a central government entity, regulates telecommunications and postal services via its two divisions: the Department of Telecommunications and the Department of Posts (DoP). The Department of Posts oversees mail and courier services, administers Small Savings Schemes, and offers retail services including bill payments, while also enforcing the Indian Post Office Act of 1898. The Post Office Act, initially adopted in 1866 and subsequently updated in 1882, 1896, and most recently in 2023, regulates postal matters, encompassing postage rates, stamp issues, conditions for shipping letters, and rules for postal transmission. Currently, the public and private sectors administer postal services in similar but distinct manners. There is presently no law that regulates private courier services. Some important distinctions result from this. The 1898 Act, for example, laid the groundwork for intercepting mail sent via India Post, but private courier services are not covered. This provision is also present in the Post Office Act, 2023 (Agarwal, Dec 5, 2023, Hindustan Times). The Consumer Protection Act, 2019, does not govern postal services; however, private courier services are obligated to offer consumer redressal (Sinha, Dec 21, 2023; Hindu Business Lines). Alongside domestic postal rules, the management of cargo, particularly hazardous materials (hazmat), and overseas shipments is rigorously governed to guarantee the safe and compliant transport of products within India and beyond.

1.1.3 Challenges of logistics in North-eastern India

The North-Eastern (NE) region of India encounters unique logistical obstacles, distinguishing it from other parts of the country. Studies demonstrate considerable heterogeneity in infrastructure and logistics both within states and within their districts in India (Nandy, 2014). The region's economic potential remains constrained due to inadequate connectivity with other parts of India. In contrast to the urbanized and well-connected areas of the country, Northeast India is distinguished by its intricate topography, isolated locales, and inadequate transportation infrastructure (Saikia & Kar, 2023). Political violence, insurgency, ethnic conflicts, migration pressures, and inter-state disputes are important for comprehending the region's socio-political and economic context (Datta, 2001). These problems hinder the reliability and efficiency of delivery services, impeding businesses' ability to serve the area. Inadequate logistics impede organizations' capacity to access markets, ensure timely delivery, and maintain competitiveness globally. Infrastructure development, encompassing both social and physical aspects, has fallen behind the rest of India, exacerbating economic inequality (Nandy, 2014). The region's challenging and isolated landscape poses significant difficulties for the development and upkeep of transportation systems (Datta, 2001). Due to restricted road connections, difficult terrain, and insufficient air transport infrastructure, enterprises encounter elevated transportation expenses and prolonged delivery durations (Nandy, 2014). The region is additionally affected by erratic weather, resulting in road deterioration, landslides, obstructions, and possible damage to transported products (Basu & Adak, 2019). These disruptions segregate communities, obstruct the movement of products and services, and impede economic growth. The region is hindered by insufficient modern warehouses and ineffective logistics services, obstructing the NE from fully using its economic potential. Intricate tax frameworks and regulatory obstacles escalate operational expenses for logistics firms, constraining the cost-effectiveness and efficiency of services for clients. Although enhancements in customs protocols and diminished trade barriers may promote more efficient cross-border transactions, ongoing border trade complications and geopolitical strife with adjacent nations remain substantial obstacles. Insurgency and political instability have historically impeded the development of Northeast India. Despite a reduction in militancy in recent years, the region's socio-economic advancement continues to encounter obstacles related to historical underdevelopment (Basumatry & Panda, 2020). These challenges must be evaluated

within the prevailing economic and social conditions of the region. Inefficiencies in border trade and bureaucratic delays have impeded the movement of commodities across borders, complicating trade. Piazza (2009) posits that terrorism and insurgency frequently stem from unresolved political conflicts rather than only from economic need. The region encounters economic and social difficulties, including insufficient land for business growth, the impact of pressure groups, and the migration of skilled labor to larger cities, influenced by local views and social factors (Basu & Adak, 2019). Frequent bandhs result in significant economic losses, including inflation, reduced investment, the emergence of underground markets, institutional challenges, and social tension (Sharma, 2014).

Thus, Assam is also a landlocked NE state characterized by harsh terrain, which restricts transit options beyond road networks, hence challenging logistics (Saikia & Kar, 2023).

1.1.4 Postal sector in the age of e-commerce

Postal services, classified as indispensable services within the nation, have a vital function in achieving an efficient single market. The operational landscape of these services is undergoing significant changes, necessitating that traditional postal services adjust in order to ensure long-term viability. The rapid progress in information and communication technologies, coupled with the expansion of e-Government services, is having a significant impact on traditional postal services. This impact is seen in the replacement of traditional letter mail with electronic correspondence, resulting in a noticeable decrease in the number of letters being processed. The conventional postal service, which has traditionally been the primary source of revenue and significance for universal service providers, is currently being confronted by these alterations.

Nevertheless, these technical advancements also create prospects for the postal industry by facilitating the implementation of novel electronic postal services and the improvement of current ones to more effectively meet the changing demands of customers. Globally, the growth of e-commerce has led to the emergence of extensive parcel transportation networks, which have a beneficial impact on the postal industry. E-commerce has become a crucial catalyst for growth, enhancing the prosperity and competitiveness of postal enterprises, and it has substantial potential to contribute to economic expansion and the generation of employment opportunities. Ensuring the quality of physical goods delivery, especially in cross-border transactions, is a vital element in the expansion of e-commerce. This can be achieved by using innovative and value-added services. In order to remain

competitive and enhance the effectiveness of universal service providers, it is crucial to utilize their networks not only for providing a diverse range of traditional and universal postal services, but also for venturing into new, non-traditional activities that can generate extra cost savings. In addition to expanding the range of products offered, it is crucial for universal service providers to convert their networks to fully utilize synergies. This transformation is essential for improving competitiveness and efficiency (Madlenakova et al., 2019).

In order to keep up with the fast-paced changes in the postal market, it is crucial to closely observe and evaluate this sector, including the effects of the current legislative framework (Kincl & Flak, 2021). Given the decrease in letter-post volumes and the increase in parcel deliveries, it is particularly crucial to consider how this impacts the provision of universal services. Acquiring new knowledge and developing innovations are necessary to adjust to changes in the technical, economic, and social environment. Utilizing knowledge gained from both the internal and external factors affecting postal enterprises is essential for developing innovative solutions that cater to the demands of postal service consumers, thereby guaranteeing the long-term viability of this industry (Murugesan et al., 2020).

India Post functions as a government-owned entity under the jurisdiction of the central government of India. Postal firms encounter distinctive obstacles, including constrained resources, market rivalry, and escalating client expectations. Public postal firms differ from private couriers in terms of their organizational structure and leadership styles. While private courier businesses often have decentralized structures and autocratic leadership styles that facilitate efficient resource utilization and market competition, public postal firms have centralized policies and democratic leadership styles. This can result in inefficiencies in the management of people, material, and infrastructure resources, hence posing challenges in competing with the private sector. The inventive activities of this organization strive to establish direct connections between rural communities and the outside world, providing them with developmental advantages right at their doorsteps. However, private players in the courier sector are providing intense competition in urban areas. Amidst the COVID-19 pandemic, India Post encountered notable obstacles but experienced a surge in the utilization of its services in both rural and urban regions to cater to the need for urgent medications, packages, critical goods, and government cash.

1.1.5 Disruption in logistics and supply chain

1.1.5.1 What is Disruption?

Disruption has no common definition and is also known as “disruptive event”, “disturbance”, “shock”, “turbulent times”, “crisis”, or “critical incident” (Finsterwalder & Kuppelwieser, 2020). When anything out of the ordinary happens to a business, it might throw off its regular operations and processes (Bier et al., 2020). There are a number of potential causes of such disruptions, including but not limited to natural catastrophes, technical failures, economic recessions, and supply chain disruptions (Xu et al., 2020). Such an incident can severely damage a business's capacity to meet customer demands, generate revenue, and supply goods and services (Zhen et al., 2016). According to Koks et al. (2019) and Ivanov and Dolgui (2020), businesses must have contingency plans and infrastructure to swiftly respond and recover from any possible interruptions. In the short and long term, natural disasters such as hurricanes, earthquakes, floods, and wildfires can wreak havoc on infrastructure and halt operations (Xu et al., 2020). Cozzolino et al. (2018) noted that data leaks or downtime might be caused by digital disruptions such as cyberattacks or system breakdowns. Additionally, companies may suffer significant consequences in the event of a recession or a market collapse (Goodman & Mance, 2011). Last but not least, supply chains might be disrupted by supplier insolvency or delivery delays (Zhen et al., 2016). Businesses can also see a dip in income if demand drops or if they have to temporarily close their doors. Businesses must be ready for interruptions and adjust their operations to reduce the negative effects on their bottom line (Cozzoline et al., 2018). Furthermore, interruptions might influence service performance, which in turn causes delivery delays and, ultimately, consumer satisfaction. The novel coronavirus SARS-CoV-2 was the spark that set off the COVID-19 pandemic (Kabadayi et al., 2020; Finsterwalder & Kuppelwieser, 2020), which caused widespread disruption around the world. Catastrophic events like the pandemic affect the healthcare system, the economy, educational institutions, businesses, and people's daily lives (Kabadayi et al., 2020).

According to Christopher and Peck (2004), resilience is the ability to manage any disruption by methodically going back to the previous state or moving toward a desirable position. An organization is resilient if it can keep running and bounce back fast from setbacks by redistributing and acquiring the necessary resources; this allows the company to learn and expand. An organization's capacity to resist and recover from challenges, as well as the resources and competencies it possesses to do so, are what ultimately determine

its level of resilience (Hillmann & Guenther, 2020). In the post-disaster phase, resilience means how quickly everything can be restored to its original state and in normal form (p. 373) (Dubey et al., 2014).

Table 1.1 Distinction between unpredictable disruption and predictable disruption

Key dimensions	Unpredictable disruptions	Predictable disruptions
<i>Duration</i>	Unknown	Some degree of predictability
<i>Government</i>	High impact	Low to medium
<i>Preparedness</i>	No such preparedness	Some sort of preparedness based on previous experience
<i>Creation</i>	The discovery, the acceleration of the issue, and the shock	Market expectations are influenced by a business burst.
<i>Disruption</i>	Disruption is high	Disruption is minimal
<i>Business</i>	Less human contact (primarily virtual), business shrinks, and action options are constrained.	Manoeuvrable and gradually enriching face-to-face and support interfaces

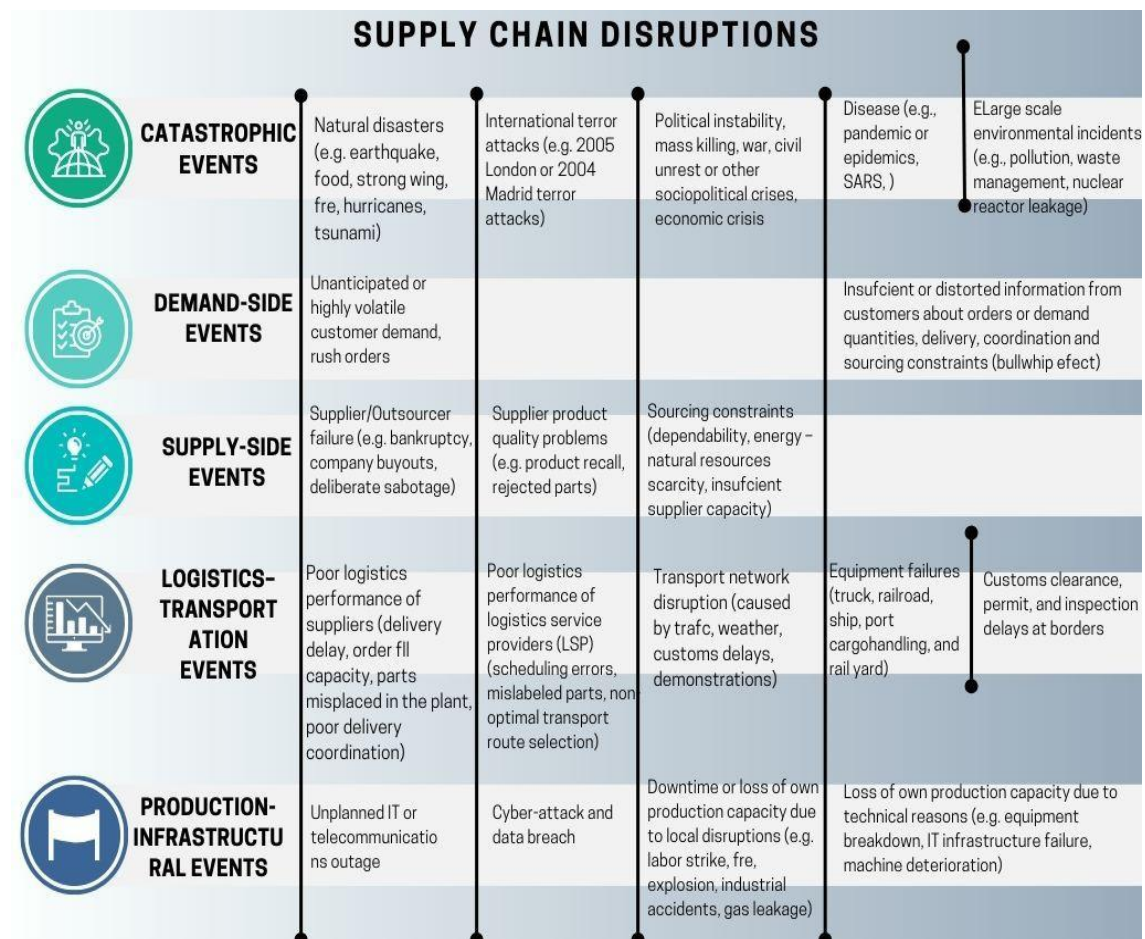
Source: Adapted from Cortez and Johnston (2020)

Unpredictable disruptions, such as a pandemic, have different characteristics from predictable disruptions, as mentioned in Table 1.1. The recent pandemic disruption was a novel disruption that required new actionable strategies to manage when compared with other prior crises (Cortez & Johnston, 2020). The impacts of the COVID-19 pandemic on supply networks markedly diverge from traditional interruptions in terms of breadth, scale, and nature (Craighead et al., 2020). This pandemic affected every nation and sector, unlike ordinary interruptions that may be limited or industry-specific. Its ramifications unfolded successively, disseminating from regions to nations and throughout many sectors in a domino effect. Disruption depth of sudden disruption gives an indication to study the preparedness of the courier and express industry, which may serve as a reference for future pandemics or other disruptive events. But most unexpected disruptions can threaten a firm's key organizational priorities and afford only a limited time for an effective response (Wang et al., 2020).

1.1.5.2 Effect on logistics and supply chain

The 2019 COVID-19 pandemic brought an unprecedented economic shock, making 2020 a "black swan" event in the literature (Magableh, 2021). Originating in China, widespread factory shutdowns, business closures, and global supply network disruptions quickly cascaded across worldwide supply chains, causing complex interruptions at multiple levels

(International Monetary Fund, 2020; Choi, 2021; Ivanov & Dolgui, 2020). These disruptions created severe demand-supply imbalances (Sharma et al., 2021; Magableh, 2021), with global supply networks struggling under the unforeseen pressures of the pandemic's recurrent waves (Ivanov, 2022; Queiroz et al., 2020). During the lockdowns, consumer behavior shifted rapidly toward online shopping and innovative purchasing methods (Alaimo et al., 2020; Cavallo et al., 2020), with e-commerce sales nearly quadrupling within weeks. This posed significant challenges for retailers who had to manage an unprecedented surge in orders and the flow of products (Anastasiadou et al., 2020; Dannenberg et al., 2020; Wang, 2017). The pandemic underscored the need for business leaders to expand traditional success metrics, recognizing the importance of resilience, responsiveness, and flexibility (Zhen, 2016). Figure 1.3 illustrates the nature of the five types of supply chain disruption.



Source: Adapted from Katsaliaki et. al., 2022

Figure 1.3 Supply chain disruptions

Moreover, COVID-19 highlighted vulnerabilities within supply chains and emphasized the necessity for resilience and new approaches to improving logistics service quality (LSQ) (Herold 2021; Wang et al., 2020). Logistics service providers (LSPs), facing unprecedented challenges, were required to manage increased volumes of operations while prioritizing employee well-being (Cichosz et al., 2020; Ardjmand et al., 2021). The pandemic's impact on LSPs affected operations, management, and finances alike, demanding swift strategies and the recalibration of future goals. Adaptations included digitizing infrastructure and processes, implementing rigorous safety measures, and adopting innovative working practices to ensure continuity and resilience (Ardjmand et al., 2021; Cichosz et al., 2020; Ivanov, 2020; Queiroz et al., 2020). Last-mile delivery refers to the final phase in the delivery process, where a package is transported from a designated location to its ultimate destination, namely, the recipient.

1.1.5.3 Worldwide cases of disruptions

Table 1.2 is a summary of significant worldwide disruptions in recent decades. It encompasses various crises, including health-related disruptions, natural and man-made calamities, and the continuing Ukraine-Russia war. Every event presents considerable challenges to supply chains, revealing vulnerabilities and underscoring the necessity for resilience strategies. Furthermore, it highlights significant natural disasters in India, emphasizing the rising incidence of floods, earthquakes, and cyclones, which have resulted in increased mortality rates over time. This data underscores the significance of strategic planning and effective logistics to alleviate the enduring effects of such interruptions.

Table 1.2 Major worldwide disruptions in recent decades

<i>Disruptions</i>	<i>Year</i>	<i>Impact</i>	<i>Sources</i>
<i>SARS</i>	2003	It caused significant disruptions, especially in Asia, where travel restrictions and quarantines profoundly affected essential manufacturing hubs like China and Hong Kong, halting production and transportation	Overby et al., 2004
<i>Financial Crisis</i>	2008	During the global financial crisis of business scales in some industries declined significantly or ceased entirely, whereas the service sector saw very minimal disruption.	Rapaccini et al., 2020
<i>Swine flu (H1N1)</i>	2009	The H1N1 swine flu pandemic exposed gaps in global SC, resulting in disruptions from shortages of workers, transportation delays, and heightened demand for medical supplies. These effects highlighted the necessity for robust supply chain measures to address future health emergencies.	Schnitzler & Schnitzler, 2009; Page et al., 2012

<i>Disruptions</i>	<i>Year</i>	<i>Impact</i>	<i>Sources</i>
<i>Japan's Tsunami</i>	2011	The tsunami that hit Japan also imposed challenges and affected the SC and organizational performance. It caused significant global supply chain disruptions, impeding manufacturing, postponing shipments, and resulting in shortages of critical components, especially in the automobile and electronics industries.	Hendricks and Singhal, 2003; Hirata and Matsuda, 2021
<i>Ebola</i>	2014	The Ebola outbreak resulted in significant mortality and social upheaval in Sierra Leone and Liberia, imposing transportation limitations that impeded the movement of products, diminished agricultural output, and escalated food prices throughout Africa.	Butt, 2022
<i>SARS-CoV-2 (COVID-19)</i>	2019	The impacts of the COVID-19 pandemic on supply networks markedly diverge from traditional interruptions in terms of breadth, scale, and nature. This pandemic affected every nation and sector, unlike ordinary interruptions that may be limited or industry-specific. Its ramifications unfolded successively, disseminating from regions to nations and throughout many sectors in a domino effect.	Craighead, et al., 2020
<i>Panama Canal blockage</i>	2021	The incident halted global trade and caused significant delays in shipping. This incident revealed the vulnerability of global supply chains to disruptions at essential infrastructure locations since the canal accounts for approximately 12% of world trade.	Miller and Clayton, 2023; Rose et al., 2023
<i>Ukraine-Russia war</i>	2022 (Started in 2014)	The Ukraine-Russia war began in 2014 with the annexation of Crimea and escalated into a full-scale war in 2022. The vulnerability of logistical networks amid geopolitical crises significantly disrupts the worldwide supply of energy and agricultural commodities like wheat, resulting in shortages and price surges. The conflict also affected essential transport lines in Eastern Europe, compelling corporations to reroute cargo and rapidly modify their logistics plans.	Hamidu et al., 2023; Nugroho et al., 2024
<i>Major recent disasters in India:</i>			
<i>Indian Ocean Tsunami</i>	2004	An overview of natural disasters in India since independence and significant calamities that have affected the nation in the last decade. Since gaining independence, there has been a gradual increase in the frequency of disasters, resulting in a corresponding rise in fatalities attributed to such tragedies. The largest number of calamities might be observed in the event of floods. While catastrophic situations cannot be prevented, their aftermath can be mitigated via meticulous preparation and efficient operations in humanitarian logistics.	Habitat for Humanity India 2013; Negi & Negi, 2021
<i>Kashmir earthquake</i>	2010		
<i>Cloudburst (Leh)</i>	2012		
<i>Indian cold wave</i>	2014		
<i>Cyclone Hudhud</i>	2018		
<i>Vishakhapatnam</i>	2019		
<i>North Indian dust storms</i>	2019		
<i>Kerala flood</i>			
<i>Bihar flood</i>			

1.2 Significance of the study

The logistical obstacles, risk reduction, planning, emergency response operations, and post-disaster rehabilitation are part of emergency handling disruptions such as the COVID-19 pandemic (Yu et al. 2020). In this context, preparedness is vital, since disruptions necessitate their provision of a logistical policy as a remedy. In order to keep operating during a disruptive environment, an effective method of transporting items is crucial

(Singh et al., 2020). Transportation constraints, a shortage of workers, or inaccessible areas due to red zones, etc., are the affected areas of logistical disruptions. A review of the preparedness of the system for shipment delivery is necessary. Thus, a comprehensive evaluation of the caliber of the logistics sector within disruptive events, as experienced from the worldwide pandemic, is crucial to check for the capability to adapt to evolving market circumstances, retain or acquire customers' confidence, and position themselves as reliable and customer-centric service providers.

The majority of research has focused on LSPs' resilience that provide integrated services such as warehousing, shipment management, and transportation. However, when the concept is narrowed down to courier, express, and parcel (CEP) service providers, LSPs manage only transportation; they uncover distinct issues, particularly in competitive environments where cost and time are crucial (Mangiaracina et al., 2019; Garol et al., 2023). Disruptions present a distinctive chance to examine how LSPs react to low-probability, high-impact occurrences, highlighting the necessity for additional research in this domain (Choi, 2021; Herold et al., 2024). Therefore, this emphasizes a need to comprehend how CEP service providers navigate disruptive occurrences and cultivate resilience.

1.3 Thesis outline

The work presented in this thesis is structured into nine chapters, including this introductory chapter.

In **Chapter 1**, the research context is introduced, covering the courier industry's growth in India, the logistical challenges specific to North-Eastern India, and the evolving role of the postal sector in the e-commerce era. The chapter provides an overview of the concept of disruption and its impact on logistics and supply chains, with examples from significant global disruptions in recent decades. The importance of studying CEP preparedness in the face of such disruptions is emphasized. Finally, an outline of the thesis is presented, highlighting the structure and focus of each chapter.

Chapter 2, establishes the theoretical foundation of the research. It begins by reviewing literature on logistics and supply chain resilience, competitive advantage, and operational efficiency. Further, it explores studies related to customer satisfaction within this context.

The chapter concludes by identifying research gaps, which inform the development of the research questions and hypotheses for the study.

Chapter 3, describes the various research methodologies employed to fulfill the research aim. The study's goal, problem statement, and research objectives have been defined. It defines the framework for index preparation and validation. This chapter outlines research design, research approach, pre-testing of the instruments, reliability testing, validity testing, data analysis methodologies, and software used for survey analysis.

Chapter 4, focuses on the innovations adopted by the CEP sector in response to the disruptive events, including the recent pandemic. The role of innovation in enhanced business performance is also investigated.

Chapter 5, is about identifying the various factors that give an edge over other CEP service providers in a disruptive environment. The role of competitive advantage factors in enhanced business performance is also investigated.

Chapter 6, examines the analysis and interpretation of the operational efficiency of courier, express, and parcel service providers. The role of operating efficiency in enhanced business performance of CEP service providers is further investigated.

Chapter 7, explains the service satisfaction perspectives of CEP users, especially in a disruption context. There are four groups of customers, namely individual postal users, individual private CEP users, organizational postal users, and organizational private CEP users. Further behavioral intention of the customer is explored for each section through the courier service quality model.

Chapter 8, provides a comprehensive description of the preparedness of the sector to deal with disruptive events. In this section, we explore the development of composite indices using information obtained from CEP service providers as well as their customers, which include both individual and organizational users.

Chapter 9, sums up the major findings of this research and adds some more insights into the preparedness of the CEP service providers in times of disruptions. Finally, the conclusion is presented to give an overview of the research outcome.

Chapter 10, presents the theoretical and managerial implications, and recommendations are also suggested.