



GRIFFITH COLLEGE DUBLIN

Graduate Business School
Dissertation Submission Cover Sheet

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Dissertation title:

Challenges for overseas firm setting up in India. An analysis
from supply chain perspective.

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I certify that the dissertation entitled: **“Challenges for overseas firm setting up in India. An analysis from supply chain perspective ”**submitted for the degree of: Master's in procurement and supply chain management is the result of the my own work and that where reference is made to the work of others, due acknowledgment is given.

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### **Acknowledgment:**

Firstly, I would like to thank my supervisor Mr. Gallagher Ronan for having faith in me and allowing me work in my own pace and also having patience throughout the dissertation writing process. It is because of this freedom and his guidance I am able to complete my dissertation in time.

Secondly, I would like to thank my classmates for participating in the pilot study in quick time. The feedback of my classmates have been very much instrumental in designing the final version of the online survey.

Thirdly, I would like to thank Mr. Andreas Udbye for his research work. His research work has been useful for me in drafting questionnaire for survey and also developing conceptual framework.

Fourthly, I would like to thank my friends and family for helping me throughout my life .

Last but not the least I would like to thank Almighty for the blessings and life.

## **Abstract:**

### Purpose –

The purpose of the research is to explore various supply chain risks that are present in Indian context and can be seen in future as well. The research also looks to present the most effective method for treating supply chain risk management in India.

### Design/research methodology/approach-

A non-probability purposive sampling method was deployed to conduct an online survey through Google form in different supply chain management groups in social media platforms. A total of 155 participants participated in the survey. A mono-quantitative research methodology was adopted for this research.

### Findings –

Most of the participants work in international companies as they have mentioned the ownership for majority of companies as 100% foreign or foreign majority. It was also observed that most of the participants work for companies that have less than 200 employees which indicates the most of the companies are new or small to medium sized companies. In relation to the supply chain risks secondary research has highlighted legal challenges, tax regime, intellectual property rights, dispute resolution, strikes, riots, social unrest, and natural calamities as some of the common supply chain risks in India. However, the primary research has found that Inadequate utility infrastructure, Corruptions/Bribery, and Taxation problems have been major supply chain risk or challenges for companies since 2015. It has also found that Major accidents such as fire/explosion/collapse of infrastructure etc, Terrorism/Riots/Civil unrest, Transport related factors, Inadequate logistics infrastructure, Frauds (physical resources/theft/intellectual property etc), Labour related problems (Strikes, unskilled labour etc) and Taxation problems are the main causes of operational impact in companies in relation to supply chain and Major accidents such as fire/explosion/collapse of infrastructure etc, Terrorism/Riots/Civil unrest, Transport related factors, Inadequate logistics infrastructure, Frauds (physical resources/theft/intellectual property etc), Labour related problems (Strikes, unskilled labour etc) and Taxation problems are the

major disruption factor/s that affect the supply chain in an organization in next three years in India.

Originality/Value –

The research adds to the previous research of supply chain risk for foreign companies looking to set up business in India by highlighting the supply chain risk that have been seen since 2015, and supply chain risk that have huge operational impact and also the supply chain risk that can be seen in future as well. The research also concludes that the most effective method for treating supply chain risk management in India cannot be designed as supply chain risk depends on external environment and also companies has to treat “supply chain security as a journey, not a destination”.

Keywords: *SCM, SCR, SCRM, MIAMI framework, foreign companies, SCM in India.*

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## **Chapter 1: Introduction**

### ***1.1 Research Context***

India is no longer an exotic sourcing and procurement destination as it has emerged as one of the favourite investment destinations in the world. The changes in the dynamics of global business ecosystem mainly because of globalisation, and liberalisation in the international trade, it has become easier for companies to invest in India. Further, the Government has taken various initiatives and efforts to make India as one of the top destinations for investment. The global “Make in India” campaign and policies liberalising the foreign direct investment(FDI) are the testimonials to Indian Government’s efforts to make India one of the favourite investment destinations in the world (Deloitte, 2020).

Foreign companies and Indian companies are producing more goods and products within India as compared to other countries in recent times. The average GDP (Gross Domestic Product) growth rate in India is 5.87 from 1951 until 2020. This indicates that India is doing very well in terms of GDP as compared to other large economies globally. Even though India is referred as a developing economy, it is the world’s sixth largest economy in terms of nominal GDP and third largest economy by the purchasing power parity (PPP) (Deloitte, 2020).

India’s export has increased from \$ 46 billion in 2001-2012 to \$ 310.23 billion in 2019-2020, which is more than an average compounded growth rate of 20%. Apart from this, trade and capital inflows have also increased significantly in last two decades, nearing to GDP of \$2.88 trillion. The total export from merchandise and services contributed \$ 528.45 billion in 2019-2020, whereas merchandise export was valued \$ 314.31 billion and service export was valued \$ 214.14 billion. It indicates that the total export is a huge contributor to the Indian GDP of \$2.88 trillion. The future growth indicator further suggests that India is likely to grow at rapid rate over next decades and making India one of the favourite destinations for manufacturing, sourcing and procurement (IBEF, 2020).

Apart from the growth story of India as one of the favourite destinations for investors, the strength of India in its diverse business landscape, skilled workforce, and promising domestic

demand market of more than 1.3 billion people with rising PPP, make India one of the prominent choices in filling the supply chain vacuum left by the exodus from China (Deloitte India, 2020).

The growth parameters along with attraction of investors towards India indicates that the global consumers are likely to see more “ Made in India” tags. This further suggests that there will be a significant increase in exports of raw materials, components, finished goods and services in India in the future. The emergence of India as manufacturing hub poses pressures of performance and efficiency for the corporates and thus long and complex supply chains in India create risk scenarios for corporates operating in India (Deloitte India, 2020).

India is a diverse country and managing supply chain in such as vast country is the most challenging aspect for companies to achieve efficiency and enhance performance. However, India has a stable Government with enabling factors such as low and skilled workforce, the fifth largest GDP, ninth ranked FDI recipient, wide base of English speaking population, robust macroeconomic indicators, and huge domestic demand with increasing PPP to attract foreign companies in India (Invest India, 2020).

It is therefore important to understand the impact of supply chain in achieving efficiency and performance for foreign companies looking to settling up business in India.

### ***1.2 Research Purpose***

Even though there are great prospects for India to attract FDI, the country also presents various challenges to managing supply chains. Some of the most common supply chain challenges include poor infrastructure, overstretched capacity, fragmented supply chain ecosystem, complex taxation system, restrictive Government policies, overlapping of state and central Government rules and regulations, transportation system, and channels of distribution (Gayatri Nayak, 2020).

The companies looking to set up business can adapt logistics and distribution models and the global best supply chain management practices to overcome these common challenges in supply chain, however, the different business landscape makes all those ineffective in Indian context. The foreign companies cannot ignore India just because they cannot adapt the existing supply chain strategies. The companies understand that India has a tremendous market potential and also provides remarkable sourcing opportunities. It is therefore important to develop a methodology

for assessing the supply chain risks in India. The dissertation builds on the existing literature on the supply chain risk management and applies the framework of mapping, identification, assessing, mitigating and improving (MIAMI) to assess the supply chain risks in India for foreign companies.

The previous literatures have identified three main gaps in the research of supply chain risk management (SCRM); No clear definition of SCRM, lack of comprehensive research on the response to SCRM cases and lack of ample research in the area of SCRM. The dissertation adds to the existing theory and framework of SCRM by modifying the methodical framework in the context of supply chain ecosystem in India and adding information related to supply chain risks prevailing in India.

### ***1.3 Research aims and objectives***

The aim of the research is to develop a methodology for assessing the supply chain risks in India. The aim can be achieved through the following objectives;

- a) To examine the supply chain management practice in India
- b) To understand the supply chain risks in India
- c) To highlight the supply chain risks for foreign companies in India
- d) To implement “MIAMI” framework

### ***1.4 Research question***

The dissertation finds out “ What is the most effective method for treating supply chain risk management by applying MIAMI framework in India?”.

### ***1.5 Structure of the dissertation***

The dissertation is presented in six chapters; Introduction, Literature Review, Conceptual Framework, Research Methodology and Methods, Presentation and Analysis of Findings and Conclusion and Recommendation. The first chapter of the dissertation is Introduction. The

chapter outlines the context of the research and explains the purpose of the research. The chapter further highlights the research questions and the aims and objectives of the research.

The second chapter of the dissertation is Literature Review. In this chapter various theories and concepts related to the research is explained. The chapter also presents the secondary research related to the topic of research. The concept of supply chain, supply chain risk, supply chain management, supply chain challenges in India and the positioning of supply chain in India is explored and analysed in the chapter.

The third chapter of the research is Conceptual Framework. The chapter illustrates the expectation out of the research and defines the route to complete the dissertation. Moreover, it helps to construct the theoretical framework to achieve the research aims and objectives.

The fourth chapter of the research is Research methods and methodology. The chapter first explores the various research philosophies and devise an appropriate research design for the research based on the requirement and purpose of the research. In this process, the chapter explores different types of research designs, data collection methods, data sampling methods, different approaches to research and choice of data. After the presentation of various research methodologies and research design, the chapter presents the justification for selection a particular research methodology and research design for this research. The selection of research methodology and research design is based on the suitability factor and also the convenience of the researcher.

The fifth chapter of the research is Presentation and Analysis of Findings. The chapter presents data collected from the primary research and it is also analysed based on the secondary data and findings are generated based on the analytical interpretation of data. The analysis includes explanation about getting a particular type of data and the meaning of data in the context of the research.

The sixth and the last chapter of the research is Conclusion and Recommendation. The chapter concludes the converging or diverging nature of the data as compared to the secondary data. The chapter presents the research limitations and also discusses about the scope for further research.

The chapter includes recommendation in the context of supply chain risk and management for the foreign companies looking to set up business in India.



## **Chapter 2: Literature Review**

### ***2.1 Introduction***

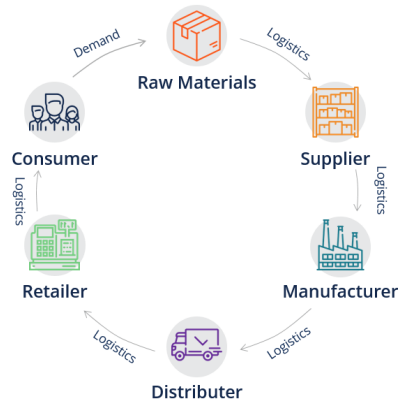
#### ***2.1.1 India : An overview***

India is a growing market and emerged as one of the favourite destinations for investment in recent times. India is one of the fastest economies in the world. Moreover, the expansion of middle class population has made India a home to a rapidly growing consumer market. However, India's improved ranking for the "ease of doing business", liberalised FDI regime, positive economic outlook and business friendly regulatory reforms have made India an attractive market for foreign companies (Zee Business, 2020).

India is huge and diverse country. The foreign companies cannot have a single magical formula to enter into Indian market and become successful. Despite favourable market conditions, there are several evidences of foreign companies being unsuccessful in Indian market. The previous research has highlighted factors such as numerous regulatory, financial, bureaucratic and cultural complexities some of the common challenges for foreign companies setting up their business in India. However, in recent times, the foreign companies are mainly focussed on supply chain risk management while operating in global markets. In general, risk consists of a mosaic of various operational and environmental disruptions, however, the risk in India can be different as compared to that in other countries in Asia (Kirtika Suneja, 2020).

#### ***2.2 Supply Chain Management***

A supply chain is a conceptual term or concept used for a network between a company and its suppliers that has a purpose of integrating supply and demand through coordinated efforts of the company. The intention of the network is to produce and distribute a specific product to customers. It can also be explained as a complete system of producing and delivering a product or service. The system starts with sourcing of raw materials to the final delivery of the product or service to the final buyer. The supply chain system includes all the aspects of production process as presented below.



Source: Corporate Finance Institute, 2020

The supply chain has numerous definitions (Please refer to table no.1).

Definition	Author/s
A network of entities that are interrelated and combined to achieve customer satisfaction and demand	Chapman et al.,2002, p.60
The network of organization that involves upstream and downstream linkages with a purpose to produce value in the form of products and services to the final buyers	Christopher and Peck, 2004, p.2
The main purpose of supply chain is to meet the demand	Cohen and Kunreuther,2007
The global supply chain refers to an organization's integrated system of sourcing, production, and distribution in such a way that the organization can maximise competitive advantage and keep balance between upstream (supplier) and downstream(customer) flow	Cavusgil et al.,2008. p.497
Supply chain is a linked set of resources and processes that starts with sourcing of raw materials and ends with delivery of finished goods to the final buyers	ISO,2011
Supply chain is a complex network that involves different players that have primary objective of minimizing costs, maximizing value, and exploring new markets through an effectively managed partners	Singhal,Agrawal and Mittal,2011.p.2

Supply chain is a network that includes suppliers, manufacturers, logistics providers, distributors, and retailers with a purpose to deliver the finished product to the final buyer	Sodhi et al.,2012, p.6
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Table 1: Various definitions of Supply chain

Source: Adapted from Cohen, M.A., Kunreuther, H., 2007.

It is very important for companies to understand their supply chain as mapping out a supply chain helps companies to perform external analysis that is vital in strategic planning process. A well-defined supply chain helps companies to define their own market and also decide on where they want to be in future. Each stages in the supply chain system helps the companies to get some insights on the attractiveness or competitiveness in the industry and also the future course of the companies.

However, supply chain management (SCM) is an active management of the supply chain system with a purpose to maximize customer value and attain a sustainable competitive advantage. The primary purpose of SCM is to have an effective and efficient supply chain system. Even though there are various definitions of SCM (Please refer to table no.2), the concept of SCM is based on two core ideas; supply chain system and coordination of supply chain activities that includes product development, sourcing, production, logistics and information systems.

Definition	Author/s
SCM is an integration of key business processes that provides products, services and information in order to add value for customers and other stakeholders	Lambert and Cooper,2000
SCM is a management of upstream (supplier) and downstream(customers) that helps an organization to achieve cost efficiency and also enhance the value of product or services for the final buyer	Christopher,2002.p .2
SCM helps organizations to recognize dependencies among the stakeholders so that an effectiveness is achieved in the supply chain system through deployment of systematic processes in the organization	Ritchie and Brindley, 2007.p.1401

SCM is an integration and management of supply chain activities through cooperative relationships, effective business processes, and information sharing to create value for the stakeholders and achieve sustainable competitive advantage for the organization.	Handfield,2007
SCM is related to coordination and collaboration of processes and activities across different functions from sourcing to delivery within a network of an organization	Osion,2012.p.12
SCM includes the planning and management of all the activities in the supply chain system from sourcing and procurement , conversion and management of logistics. It also includes coordination and collaboration with the channel partners such as suppliers, intermediaries, third party service providers and customers. SCM mainly integrates supply and demand management within and across companies	Council of Supply Chain Management Professionals,2012
SCM is the management of material, information and financial flows through supply chain activities. It involves coordination and collaboration of supply chain functions such as marketing sales, production, product design, procurement, logistics, finance and information technology with the supply chain of an organisation.	Craighead, C.W., Blackhurst, J., Rungtusanatham, M.J., Handfield, R.B., 2007

Table 2: Various definitions of Supply chain Management

Source: Adapted from Udbye, A., 2014.

SCM is a broad concept and has numerous definitions however the research has adopted the definition of the Council of Supply Chain Management Professionals to achieve the research aims and objectives (Great Britain et al.,2003).

According to the Council of Supply Chain Management Professionals, “ *SCM includes the planning and management of all the activities in the supply chain system from sourcing and procurement , conversion and management of logistics. It also includes coordination and collaboration with the channel partners such as suppliers, intermediaries, third party service*

*providers and customers. SCM mainly integrates supply and demand management within and across companies” (Handfield, R., McCormack, K.P., 2007)*

### **2.3 Supply Chain Risks**

Supply chain risk is mainly due to exposure and uncertainty in the supply chain system in an organization. Even though risk can be internal and external in nature, most of the supply chain risks are external in nature. The external environment in which an organization is operating results in the nature and risk severity. It is because of the changes in the external environment vulnerability of supply chains to disturbances or disruptions has increased (Chapman, P., Christopher, M., Juettner, U., Peck, H., Wilding, R., 2002).

Chandwani (2018) has highlighted three factors for the increased vulnerability; an increased competitive pressures, accelerating globalization of markets and increased inter-firm dependencies. The increased competitive pressures have made companies to be more responsive and put efforts to make processes and supply chain management more effective and efficient. The companies have made supply chain system leaner that involves lower inventories and faster turnaround time. Most of the companies have discovered various alternatives of suppliers but switched to the primary supplier for sourcing of the important materials. The enhanced quality control, quick penetration to new markets, better selection of resources, and improved delivery time have resulted in improved customer service. The companies have taken efforts to achieve cost and operational efficiencies so that they can attain sustainable competitive advantage.

The globalization of markets at faster pace have created opportunities for companies to easily find reliable and cheaper sources overseas. However, the supply chain system of the globalised companies have become complex as there are challenges in communication, cultural differences in customers, and longer freight routes. The globalised supply chain has created added uncertainties and supply chain risks. The ability of companies to understand the international market along with the international market and suppliers are key in their success in international market (McCormack, D.K., Wilkerson, T., Marrow, D., Davey, M., Shah, M., Yee, D., 2008).

The age of globalization has increased the reach of market and customers but there is also an increase in inter-firm dependencies. The companies nowadays have increased coordination and

collaboration within the supply chain networks to achieve efficiency, effectiveness and sustainability. The ability of companies to balance the downstream(suppliers) and upstream(customers) have developed greater mutual dependencies and sensitivities (Olson, D.L., Wu, D., 2020).

All these three factors have huge role in the complex global supply chain and thus are also responsible for global supply chain risks.

Handfield (2020) The supply chain risks can be generally categorised as following;

- a) Risk associated with supply chains flows (goods, information and finance)
- b) Risk related to security (various crimes/frauds)
- c) Risk related to opportunistic behaviour ( mainly trust issues)
- d) Risk related to corporate social responsibility

Definition	Author/s
A variation in the distribution stage of supply chain outcomes and their likelihood and their subjective value	Juttner, Peck and Christopher, 2003
SCR (Supply chain risk) is any risk for information, material, and product flows that can be seen from the stage of supplier to the delivery of final product or service to the final buyer. In general term , SCR is the risk because of the possibility or effect of imbalance between demand and supply.	Juttner et al.,2003.p.3
SCR can be viewed as a possibility of danger/damage/loss/injury or resulting in undesired consequences	Harland et al.,2003. p.52
SCR can be an organization's inability to meet demand	Sheffi, 2005,p.14
SCR is an unplanned and unanticipated events that can have negative impact (financial or operational) on the supply chain management of an organization.	Craighead et al.,2007,

	p.132
SCR can be an unwanted and unintended situation which makes complex supply chain system in an organization	McCormack et al., 2008, p.6
SCR can be various types of risks such as source risks, manufacture risks, delivery risk,and return risks	McCormack et al., 2008, p.22
SCR is a deviation from the expected purpose and value of SCM that can have negative impact	Wager and Bode, 2009,p.5
SCR is the negative outcome that is seen in the supply chain, logistics networks, and transportation operations	Wager and Bode, 2009,p.5
SCR results in loss of time, money and resources and restrict organization from achieving the organizational goal/s	Gitman and McDaniel, 2009, p.4
SCR can cause mainly operational risks (impacts SC system) and disruption (natural and man-made crisis)	Olson, 212,p.13

Table 3: Various definitions of Supply chain Risks

Source: Adapted from Singhal, P., Agarwal, G., Mittal, M.L., 2011

#### ***2.4 Supply chain risk management***

The concept of Supply Chain Risk Management (SCRM) is fairly a new concept, started only in the early 2000s. There are several research available on SCRM however, it is often seen that the concept of SCRM is overlapped with Enterprise Risk Management (ERM) and Emergency and Disaster Preparedness (EDP). However, ERM is discussed in the context of financial and strategic risk while SCRM is seen as an extension or subset of ERM (Sodhi, M.S., Lee, S., 2007).

The definitions of SCRM is mainly linked to identification and management of risk in supply chain and devising strategies or plans to minimize the impact of those risks so that an organization's customer service, profitability, competitive advantage and long term sustainability are not affected. SCRM has four elements ;identification, assessment, mitigation and responsiveness to operational and catastrophic risk events (Sodhi, M.S., Son, B.-G., Tang, C.S., 2012). The detailed definitions of SCRM is presented in table no.4 as below.

Definition
SCRM can be explained as the identification and management of risks with the supply chain system of an organization and implement a coordinated approach to minimise or completely eradicate the supply chain vulnerability in the organization
SCRM is identification and management of risks in an organization so that the organization can understand the vulnerability of the risk and react according to the level of risk
SCRM has a purpose of identifying potential sources of risks and implements effective approaches to reduce or void the identified risks in an organization
SCRM involves the process of identification risks, investing in the risk events and training, assessing the probability of occurrence and developing contingencies for alternative ways of supply chain
SCRM is an organization's ability to manage risk so that the organization can protect its assets, and profit to have a sustainable growth
SCRM is mainly related to an act of removing the uncertainty in the external environment so that the organization can have less or no damages.
SCRM allows an organization to coordinate and collaborate with the supply chain partners so apply risk management system in each supply chain activity so that the organization can easily deal with the risks and uncertainties and control the damage if any
SCRM is a process that focuses on the supply chain system of an organization to reduce uncertainty and also improve customer satisfaction. It has further aim of achieving competitiveness, efficiency, cost efficiency, profitability and

enhanced customer satisfaction
SCRM is the management of supply chain risks with a purpose to ensure profitability and sustainability through coordination and collaboration among the supply chain partners.
SCRM is an organization's capability to continuously assess the pattern of activity in the supply chain so that any irregular activity can be easily found and treated to reduce the risks and its impact in the organization
The primary goal of SCRM is to make decision to mitigate the risk rather than assess the risk
SCRM involves devising strategies firstly for reducing the risk possibility and secondly adopting effective approaches so that risks can be reduced or mitigated
SCRM allows companies to control, monitor and evaluate supply chain risks
SCRM controls the supply chain capabilities in an organization so that the organization is able to anticipate and overcome disruptions.
SCRM is a process of evaluating, controlling, and monitoring risks so that an organization can safeguard supply chain continuity and maximize profitability. It has also primary motive to minimize the risks that can be translated in the form of financial, strategic, operational, accidental and other losses
SCRM can be seen as company's capacity to agile
SCRM provides solutions to risks evolved during the supply chain activities and ensures that there is balance between demand and supply
SCRM is a process of identifying the likelihood of potential damage and the impact on the revenue of the business and mitigation approach to reduce further losses and damages
SCRM can also be seen as a practice of managing risk in regular fashion so that it can be contained and minimize the scope of expansion. SCRM has been always seen as a strategy that enables companies to avoid cost, improve customer service and increase market position

Table 4: Various definitions of Supply chain risk Management

Source: Wagner, S.M., 2009

In all these definitions of SCRM, the process of SCRM can be explained in five steps progression.

Define (mapping) of supply chain of an organization – identification of possible relevant risks in that organization – assessment of risk as per the probability of occurrence and potential severity of impact – mitigation of risks through contingency plans – monitoring of the risks and imply continuous plans for improvement (Wagner, S.M., Bode, C., 2006).

### ***2.5 Common Supply Chain Challenges for foreign companies in India***

India understands the importance of FDI (Foreign Direct Investment) in India and therefore has FDI regime has been progressively liberalised since 2000s. The steps and efforts such as removal of a number of restrictions on foreign investment, simplification of procedures, regulatory reforms, positive economic outlook and creation of investment friendly environment have created a liberalised FDI regime in India, however, there are still various challenges for foreign companies to understand and prepare to overcome these challenges and become successful in Indian market. Most of the previous research have highlighted legal challenges, tax regime, intellectual property rights, dispute resolution as the most common challenges for foreign companies looking to set up business in India (Chandwani, 2018).

India has a comprehensive legal systems but overloaded courts. It is because of the overloaded nature of the courts in India, most of the foreign companies have to look out for various alternatives to secure licenses and approvals to start business in India. The legal system of India is entangled between the Centre and the State. It adds to the complexity of getting license and approval. Apart from that high flying bureaucracy and events of corruption are also major concerns for foreign companies looking to set up a business in India. Foreign companies and also the local companies face the challenge of navigating India's bureaucratic hurdles and red tapism. For foreign companies, it is not only required to invest in getting license and approval but they also need to invest in hard and soft infrastructure. So, it is important that foreign companies collaborate with the local vendors, suppliers and business partners in technical, financial and

legal ways. It is seen that most of the foreign companies that are successful in India, have local soft power (Chandwani, 2018).

India is home to cheap raw materials, labour and operational excellence, however, the impact of tax and other related costs cannot be neglected. The tax system has been very complex in India. The CIT (Corporate Income Tax) on foreign companies has been 40% in addition to surcharge and education cess. The surcharge range between 2% to 5% whereas education cess is 2% and higher education cess is 1%. It is because of the complex taxation system foreign companies need to hire specialised local professionals which is an additional cost for the companies. In 2017, an indirect tax came into effect on the manufacture, sale and consumption of goods and services, that is also called Goods and Service Tax (GST). However, there has been continuous revisions in the taxation system to make it more efficient and simple. The Government of India understands the importance of FDI on the growth of Indian economy and thus provides some of the direct tax incentives such as tax holiday, deductions, R&D activities, promotion etc. India has signed various double tax avoidance with various countries so that foreign companies can avoid paying double taxes in the source and residence countries. Further, the revision of GST system has simplified the taxation system in India. It has cascaded the effect of taxation that has resulted in improved credit chain. The provision of Special Economic Zones (SEZ) offers multiple advantages to the foreign companies. Government of India's initiatives have been instrumental in creating a hassle free environment for exports, creating an integrated simplified infrastructure and deployment of attractive packages for the foreign companies to invest in India. The Government's initiatives in liberalizing the norms in minimum land area requirements, transfer/sale of ownership, availability of land at subsidized rate etc have certainly made the Indian taxation system hassle free and simple (Chandwani, 2018).

Not just for foreign companies but also for local companies safeguarding of intellectual property rights is a priority and major concern. The name of the company, logo, design, copyright, license, trademarks, patents and invention are some of the types of primary intellectual properties (IP). India has adequate laws for IP. Some of IP laws includes the General Agreement on Trade and Tariff (GATT), Trade Related Aspects of Intellectual Property Rights (TRIPS) agreement, WIPO Internet treaty that includes WIPO Copyright Treaty (WCT) and WIPO Performances and Phonograms Treaty (WPPT). Even though India has an elaborate and robust IP laws the

enforcement of these IP laws is weak and this is the major challenge for foreign companies. Duplication of products/services, and piracy of copyright materials have emerged as widespread problems in India. However, there has been efforts to improve the IP right scenario in India and the IP laws are enforced strictly (Chandwani, 2018).

It is because of the long period of British colonial influence, the litigation process in India is based on the English common law. However, the Indian Arbitration and Conciliation Act, 1996 is based on the Model Law on the International Commercial Arbitration which is adopted by the United Nations Commission on International Trade Law (UNCITRAL). The international approach to the Arbitration and Conciliation Act indicates that the dispute resolution is performed at the international level (Chandwani, 2018).

Strikes, riots, social unrest and natural calamities are also some of the factors that have emerged as challenges for not just foreign companies but also for local companies in India. Nirbhaya Movement, 2012, Pro-Jallikattu Protests, TamilNadu, 2017, FTII Agitation, 2015, Jan Lokpal Bill: Anti-corruption Movement, 2011, Delhi riots 2020, and current Indian farmers' protest 2020 and major terror attacks such as Amarnath Attack,2017, Uri Attack, 2020 , Pulbama Attack, 2010, Parliament Attack,2001etc are some of evidence of strikes, protests, riots and terror attacks in India. Similarly, Kashmir floods disaster, 2014, Kerala floods, 2020, Oil and Gas leak in Assam,2020, Locust Attack,2019 and 2020, Cyclone Nisarga, 2020 are some of the evidences that indicate India as one of the world's most vulnerable countries (Times of India, 2019). India as a country is highly vulnerable to floods, cyclones, avalanches, heat/cold waves, landslides, lightings, earthquake and droughts. The country's unique geo-climatic conditions are the main reason for such vulnerability. Global Climate Risk Index (2019) has rated India the 14<sup>th</sup> most vulnerable country globally (Goel, Y.P.A., 2020).

Despite of these challenges, the success of foreign companies heavily depends on their ability to understand the relationship and build specific formal and informal networks. The partnership of foreign companies with the local knowledge centres allows them to understand the local customers and market. The local stakeholders in the form of workers union, local transport association etc are important for the foreign companies to have an for effective supply chain management. Apart from this, the positive economic outlook, domestic market, rising middle

class population, and improving “ease of doing business” index are major attractions for foreign companies to invest in India.

## **Chapter 3: Conceptual Framework- MIAMI framework**

A MIAMI framework is adopted for the conceptual framework for this research. The MIAMI framework includes mapping, identifying, assessing, mitigating and improving.

### ***3.1 Mapping***

Mapping the supply chain has become challenging for most of the company that are involved in global sourcing and don't have their own logistics. The reliance of companies on the third part logistics service providers (3PL's) adds to the complexity of the supply chain. The inflow of relevant and accurate information is key in having an effective and efficient supply chain practice in this context. The process of mapping helps companies overcome inefficiencies, redundancies and risks through defining and mapping the partners in the supply chain system (Jüttner, U., Maklan, S., 2011).

The mapping of the flow of materials, information and investment helps companies to understand the different activities that are being done at different times and places. In order to produce a product in India it is important for companies to source raw material within the country or from international and the process of mapping helps companies in identifying internal and external environments and risks that can be associated with those environments (Peck, H., 2006).

### ***3.2 Identification***

Once the mapping is done and the internal and external environment for a particular business or product is understood identifying the potential risks in those internal and external environments are vital for companies looking to set up businesses in India. The ability of company to identify risks before its occurrence translates into better risk assessment framework and that also directly impacts the risk mitigation capabilities (Rao, S., Goldsby, T.J., 2009).

The previous research has indicated that supply risks can be either operational in nature or disruptive in nature. The operational risks are developed because of internal environment of an organization while the disruptive risks are generated because of external environment or man-made hazards. The environmental risks needs business continuity planning while the made-made hazards need supply chain security management (Jüttner, U., 2005).

Some of the authors have further categorized risks into supply risks, operational risks, demand risks, security risks, macro risks, policy risks, competition risks and resource risks. Irrespective of the categorization of the risks the ability of a company to identify all the potential risks well in advance is important in an effective and efficient supply chain practice (Olson, D.L., 2011).

### ***3.3 Assessment***

The immediate next step after risk identification is risk assessment so that companies can understand and estimate the likelihood of occurrence and the kind of impact a particular risk can have in the sustainability of the companies. The sole purpose of risk assessment is to understand the nature of risk and the kind of damage it can make so that managers can prioritize the risk mitigation accordingly. The risk with the capacity of high vulnerability needs to be mitigated at the earliest while the risk with low vulnerability needs to be mitigated last (Ritchie, B., Brindley, C., 2007).

The impact of disruption on a supply chain system of an organization varies based on the level of resiliency in the supply chain of that organization (Chapman, Paul, Christopher, M., Jüttner, U., Peck, H., Wilding, R., 2002).

So, the level of supply chain resilience of an organization is important in deciding its ability to recover from disruptive events. Furthermore, the level of supply chain resilience is dependent on four capabilities of an organization; flexibility, speed, visibility and collaboration. An organization that has the flexibility in suppliers and processes and functions of supply chain, speed in taking decision to mitigate risk, visibility of supply chain activities through relevant and updated information and collaboration and coordination with the supply chain stakeholders are likely to assess the occurrence of risks more accurately and within a stipulated time (Lambert, D.M., Cooper, M.C., 2000).

However, there are five generic risk management strategies ; accept, avoid, reduce, transfer and share. Wagner and Bode (2008) suggested that risks can be sourced in four steps; scenario, cause, effect and impact. However, the perceptual assessment is more instrumental in making decision for risk management as compared to the objective assessment of risks.

### ***3.4 Mitigation***

The information and details about risks available through the steps of mapping supply chain, identifying relevant risks and assessing the likelihood of risk are important for managers in risk mitigation (Sodhi, M.S., Tang, C.S., 2012).

The process of risk mitigation involves activities that can either prevent from occurrence or decrease the impact. It is mainly aimed to have a preventive and continuity management for risks in an organization.

In general companies can adopt the generic risk management strategies; accept, avoid, reduce, transfer and share to mitigate risk, however, the recent progression on the risk mitigation suggests that companies can also adopt deferment strategy to that they can have enough time to devise an effective strategy to mitigate risk. The deferment strategy needs time and also can be applied to risks that do not have immediate impact. The risk management strategies can only be effective if there is coordination and collaboration among the supply chain stakeholders (Sodhi, M.S., Tang, C.S., 2009).

Modern supply chain requires flexibility and agility and companies' ability to develop flexibility and agility are vital in the process of risk mitigation(Cavusgil, S.T., Knight, G., Riesenberger, J.R., Rammal, H.G., Rose, E.L., 2014).

### ***3.5 Improving***

The step of Improving is the last step in the "MIAMI" framework and it is important step to develop an effective and efficient SCRM practice based on their previous learning and experiences and also changes in the operating procedures in external environment.

SCRM cannot be uniform as the customers and markets differ in global supply chain and also the external environment keeps changing. So, it is important for companies to keep their SCRM practices updating as per the requirement. Companies cannot treat "supply chain security as a destination but a journey" (Christopher, M., Lee, H., 2004).

The step of “improvement” involves operational metrics and procedures that emphasizes on optimization and sensitivity and these variables depends on the internal and external environments (Christopher, M., Peck, H., 2004).



## **Chapter 4: Research Methodology and Methods**

### ***4.1 Introduction***

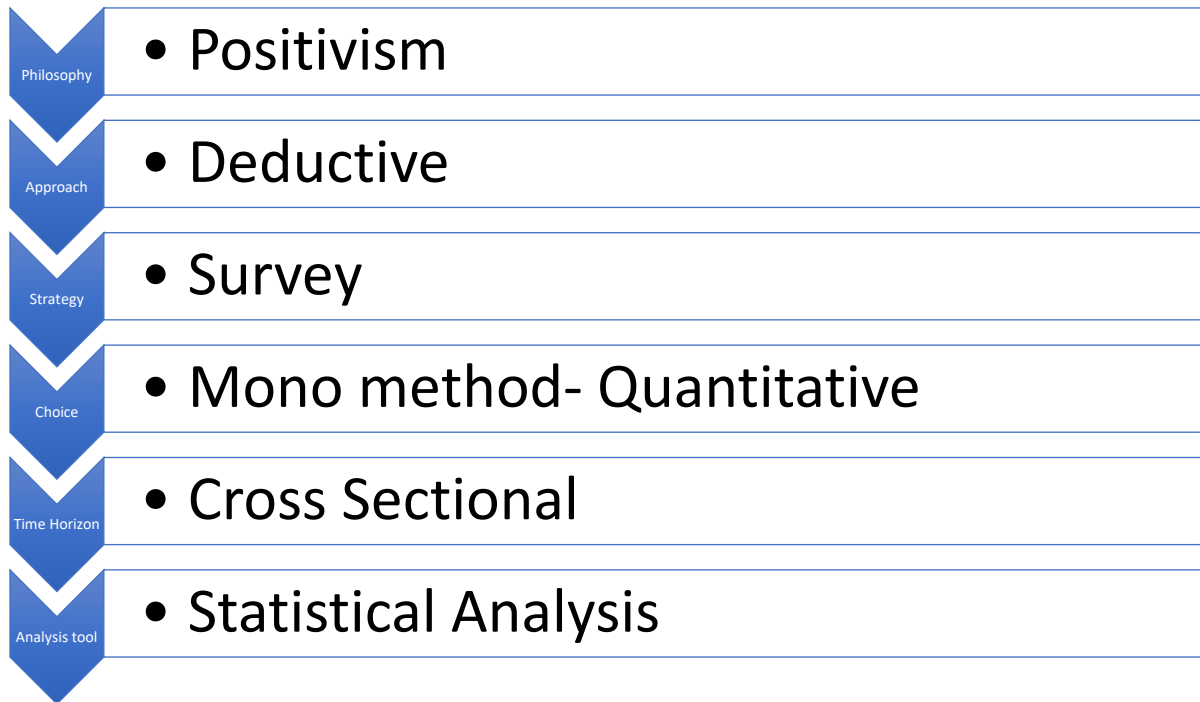
The research looks into the supply chain risks for foreign companies interested in setting up business in India. In this context, the investigation is about exploring the supply chain risks in Indian supply chain system, and understanding operational impacts of supply chain risks, the risk mitigation methods that can be useful in the Indian supply chain system, and the futuristic supply chain risks. An online survey is targeted to 150 supply chain professional in India to generate primary data while the defining the supply chain management in the context of the research and refining of the MIAMI framework were useful in developing questionnaire that can help to achieve research aims and objectives.

However, the chapter of research methodology and methods explains the reasons for selecting a particular research philosophy and devising a particular research design for the research.

### ***4.2 Research Philosophy***

Research Philosophy is related to the development and nature of knowledge. The nature and development of knowledge are vital in the research (Saunders, M., Lewis, P., Thornhill, A., n.d) . It is based on the development and nature of the knowledge research philosophy can be categorised as realism , pragmatism, interpretive and positivism. Realism research philosophy is similar to positivism research philosophy in its processes and beliefs but differ in the knowledge as it think scientific methods are not perfect (Saunders, M.L.P., n.d. Thornhill, A, 2000). The pragmatic research philosophy has combination of both constructivism and objectivism and mainly used for research that finds the solutions to problems. The interpretive research philosophy is mainly used for research that are focussed on social and cultural life. Among these, positivism research philosophy is mainly used in quantitative research (Saunders, M., Thorn, H.A., Lewis, P., 2007). The research has proposed a research question that needs to be answered based on the knowledge in the supply chain in India.

### 4.3 Research Design



Source: Cooper, D.R., Schindler, P.S., Sun, J., 2003

#### 4.3.1 Research methods

The theme of the research is to understand the supply chain risks in India. So it is important to collect primary data from a large population to validate the findings of the research. The task of collecting primary data from a large population can be done through polls, questionnaire and surveys. All these data collection instruments fall under quantitative research methods (Saunders, M., Lewis, P., Thornhill, A., 2009). So, quantitative research is selected for this research. Apart from this, the quantitative research method is chosen over qualitative research method because quantitative research method adds following benefits to this research (Saunders, M., Lewis, P., Thornhill, A., 2003).

- Able to collect data from a large research sample
- Quantitative research is more reliable as it is objective in nature
- The quantification of the primary data is easy

- d) The generalisation of the findings are possible as the data collected through survey can be quantified easily
- e) The scope of personal bias is less and can be avoided
- f) It adds to the validity and reliability of the data analysis.

#### **4.3.1.1 Research Approach**

There are three types of research approaches; deductive, abductive and inductive. The deductive research approach is suitable to research that want to test a model/theory/hypothesis. The abductive research approach is based on the propositions that a conclusion is known and has reasoning towards logical consequences and extended knowledge. The inductive research approach however is opposite to the deductive research approach and applicable for research that wants to build a model/theory/hypothesis (Saunders, Marks, Lewis, P., Thornhill, A., 2007).

The research aims to test the existing theory related to supply chain management and risk in India and presents the changes that have been seen in the supply chain risk management in India. It also looks the existing theory for supply chain risk management in India and recommends the most suitable in the Indian context. So, it is essentially a research for a process pattern rather than completely new pattern. The process pattern can be researched through deductive research approach, so it has been included in this research.

#### **4.3.1.2 Research Strategy**

Research strategy suggests the instruments or medium through which primary data can be collected for the research. Some of the commonly used research strategy includes experiment, survey, case study, action research, grounded study, ethnography, and archival research (Saunders, M., Lewis, P., Thornhill, A., 2012).

The experiment research strategy is mainly used for research that tries to establish a cause-effect relationship between two or more variables. The Survey research strategy is instrumental in collecting data from a large individuals through predefined questionnaires. The case study research strategy is an inquiry about an individual case or an organization. The action research strategy is used to answer the real-world problems and the purpose is to gain knowledge or solve

an organizational problems. The grounded theory research strategy has a set of systematic inductive methods for conducting subjective research with a purpose to develop a theory (Ghauri, P., Grønhaug, K., Strange, R., 2020). The ethnography research strategy is mainly used for research of cultures and societies while the archival research strategy used for the research that needs secondary data that can be derived from the existing manuscripts, documents, videos, and related sources (Saunders, M., Lewis, P., Thornhill, A., 2017; Sekaran, U., Bougie, R., 2016).

The research uses survey research strategy as can be used for a quantitative research and also allows to collect data from individuals through questionnaire and in large scale.

#### **4.3.1.3 Research Choice**

A research can use mono method, mixed method and multi method for research. The mono method research uses only one research methods; either quantitative or qualitative. The mixed method can use a combination of two research methods (Malhotra, M., 2019). It can be quantitative and qualitative however, the multi research method uses two or more than two research methods in collecting primary data (Saunders, M., 2009).

For this research only quantitative research method is used, the research choice of the research is mono method.

#### **4.3.1.4 Time Horizon**

The time horizon can be of two types; cross sectional and longitudinal (Lewis, S.M., Saunders, M., & Thornhill A., 2003). The cross sectional time horizon can be used for both quantitative and qualitative research methods like longitudinal time horizon but the only difference between the two is that cross sectional research is conducted at a single point of time and within a time bound manner but longitudinal research study events and behaviours using concentrated sample over a longer period of time (Hair, J.F., Money, A.H., Samouel, P., Page, M., 2007). The longitudinal research is done repeatedly on a concentrated sample so the duration of the research is longer as compared to cross sectional research (Bougie, R., Sekaran, U., 2016).

The nature of research is academic and it is a time bound research. So, cross sectional time horizon is selected for this research.

### **4.3.2 Research Sample**

The research has a pre-requisite to collect data from a large research population and individuals who are supply chain professionals. The trade associations and chambers such as India Chamber of Commerce, Regional Chamber of Commerce, World Trade centre etc could have been an ideal place for defining research sample for the research. However, getting data from these were not possible mainly for two reasons; not able to travel due to COVID-19 and limited working force in these associations and chambers.

So the alternative to this was to look for supply chain professional groups in virtual medium such as Facebook, Whatsapp group etc. The online survey link was posted on various supply chain professional groups and the sampling of the research population was based on the principle of “non-probability purposive sampling method” (Bam, K., 1992).

### **4.3.3 Data Quality**

The quality of data is very important for generation of relevant findings. The accuracy of data, completeness, timeliness, uniqueness, and validity add to the quality of data and improves the “fitness for use” of data (Bell, E., Bryman, A., Harley, B., 2018).

In order to improve the data quality the following steps were performed;

#### **a) Defining problem**

The primary source of primary data required in this research is from online survey presented through questionnaire. It is therefore important to that the questionnaire is understood in the same manner that the researcher has thought while designing the questionnaire. The responses received in the same sense through which the questionnaire was designed, adds to the validity and reliability of the data.

#### **b) Identification of problem**

In the essence of defined problem a pilot test was conducted with a group 10 classmates from Griffith College Dublin. In the pilot test most of the participants identified two problems.

The first problem was about duplication of questions and second was related to clarity of the question.

c) Analysis of problem

After the two problems were identified it was important to analyse the problem and understand if there was any scope to improve it.

The first problem of duplication if same question in question no 4 and 9 in the draft survey as presented below are same .

4) Please indicate to which category your company generally falls into

- Non- durable goods and services
- Durable goods and services
- Construction (Real estate)
- Heavy Machinery and equipment
- Medical
- Education
- Information Technology
- Natural Resources
- Entertainment
- Agriculture, forestry and fishing
- Mining
- Manufacturing
- Energy
- Transportation
- Hotels and restaurants
- Financial and Insurance

- Scientific research
- Human health and social work
- Others \_\_\_\_\_ (Please specify)

9) Please indicate the category in which goods or services of your company source or produce in India

- Non- durable goods and services
- Durable goods and services
- Construction (Real estate)
- Heavy Machinery and equipment
- Medical
- Education
- Information Technology
- Natural Resources
- Entertainment
- Agriculture, forestry and fishing
- Mining
- Manufacturing
- Energy
- Transportation
- Hotels and restaurants
- Financial and Insurance
- Scientific research
- Human health and social work
- Others \_\_\_\_\_ (Please specify)

The second problem of clarity was highlighted in the risk related as presented below. The factors that were mentioned were not defined or had broader view or meaning. For instance, major accidents, frauds and labour related problems were not defined and most of the participants were confused.

*(Please tick as appropriate based on the reasons of disruptions below)*

		Zero times	1-2 times	3-5 times	6-8 times	More than 9 times
<b>13</b>	<b>Since 2015, how many times supply chain has been affected in India because of any one or more factors below?</b>					
a)	Floods/Weather	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b)	Major accidents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c)	Terrorism/Riots/Civil unrest	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d)	Transport related factors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e)	Inadequate logistics infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f)	Inadequate utilities infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g)	Frauds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h)	Corruptions/Bribery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i)	Bureaucracy/ Red Tape/complex regulatory frameworks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j)	Labour related problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k)	Taxation problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l)	Supplier issues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

		No Impact (1)	Minor Impact(2 )	Moderate Impact(3)	Major Impact(4 )	Catastrophic Impact(5)
<b>14</b>	<b>Please indicate the operational impact because of the following factors in supply chain in India</b>					
a)	Floods/Weather	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b)	Major accidents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c)	Terrorism/Riots/Civil unrest	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d)	Transport related factors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e)	Inadequate logistics infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f)	Inadequate utilities infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g)	Frauds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h)	Corruptions/Bribery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i)	Bureaucracy/ Red Tape/complex regulatory frameworks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j)	Labour related problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k)	Taxation problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

l)	Supplier issues	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
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		Don't think it will affect our supply chain (1)	Less frequently than the previous disruption (2)	Same frequenc y as before(3)	More frequent than before (4)	Not sure (5)
<b>15</b>	<b>How frequently do you think the following disruption factor/s affect supply chain in your organization in next three years in India ?</b>					
a)	Floods/Weather	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b)	Major accidents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c)	Terrorism/Riots/Civil unrest	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d)	Transport related factors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e)	Inadequate logistics infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f)	Inadequate utilities infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g)	Frauds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h)	Corruptions/Bribery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i)	Bureaucracy/ Red Tape/complex regulatory frameworks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

j)	Labour related problems	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
k)	Taxation problems	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
l)	Supplier issues	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

#### d) Improvement

The first problem of duplication of questions looks valid, even though those two questions (question 4 and question 9 in the draft survey presented in appendix1) were intended to have different perspectives ; categorization of company and goods. The question no.4 was removed in the final survey presented in appendix 2. The second problem of clarity on factors such as major accidents, frauds and labour related problems were defined in the final survey (Please refer to appendix 2 - <https://forms.gle/89WNw5b3r9A1AUGHA>)

Apart from these, the online survey form was designed in such a manner that one participant can record only one response. It has avoided the data duplication problem and added to the quality of data.

#### 4.3.4 Ethical Issues

First and foremost, an introduction letter or a letter of consent(please refer to appendix 3) was put in the beginning of the online survey so that the participants were aware about the nature of research, purpose of research, aims and objectives of research, nature of participation and confidentiality of data.

After that the research has abode all the ethical principles such as principle of informed consent, principle of beneficence -Do not harm, principle of anonymity and confidentiality and principle of respect and privacy during and after completion of the research. This is a social research that required a large research sample, so the researcher made sure that questions related to age, income, gender, education, phone number, email or any other personal details were not included

in the survey. This helped the researcher to avoid any confidential issue which is majorly seen in academic – voluntary survey participation (Adams, J., Khan, H.T., Raeside, R., 2014).

#### **4.3.5 Research Limitations**

The main research limitation has been restriction of mono research method due to time constraints. The inclusion of mix or multi research methods could have provided more data. However, the research population of 155 participants has also generated enough data required to answer the research question.

The COVID-19 has restricted travel of researcher to the Indian business chambers and associations to gather data directly from the supply chain professionals. The social groups of supply chain professions and aspirants in different social platforms lack the authenticity of being supply chain professions. It is very likely that not all of the participants are supply chain professionals. Apart from this online survey does not allow researcher to clarify doubts as the participants are not know but paper based survey allows the researcher to directly contact the participants and vice versa. However, it was not feasible to distribute paper based survey for participants because of COVID-19. The online survey turned out to be the best possible tool to collect primary data in the extreme situation of COVID-19.

The questionnaire cannot provide an opportunity for clarification unlike interviews where interviewer and interviewee are face-to-face and clarification is easily possible. However, the research had conducted a pilot study to understand the difficulties of participants in understanding the questions and responding to them. It is based on the feedback of the participants in the pilot study the research was able to improve the quality of questionnaire and thus improved the quality of data. Even after the efforts have been taken in pilot study to improve the questionnaire, there is very likely some of the participants would have not understood the questionnaire in the same sense in which it was asked. This could result into misleading or slightly biased findings. However, The chances are reduced because of the pilot study conducted before the actual survey took place online.

# Chapter 5: Presentation and Analysis of Findings

## 5.1 Introduction

The chapter explains the process of data collection and presents the primary data collected through online survey. The data presented is then analysed to generate findings and a discussion presented based on the analysis of the findings.

## 5.2 Data Collection

Once the research sample was defined, an online survey link was posted in various supply chain professional groups in various social media platform. A total of 185 responses were recorded in a week time, however, only 155 responses were considered for the research as only 155 told that their companies source or manufacture/provides goods and services in India. The data is collected on two themes; general questions and risk based questions.

## 5.3 Presentation of Data

### 5.3.1 General Information

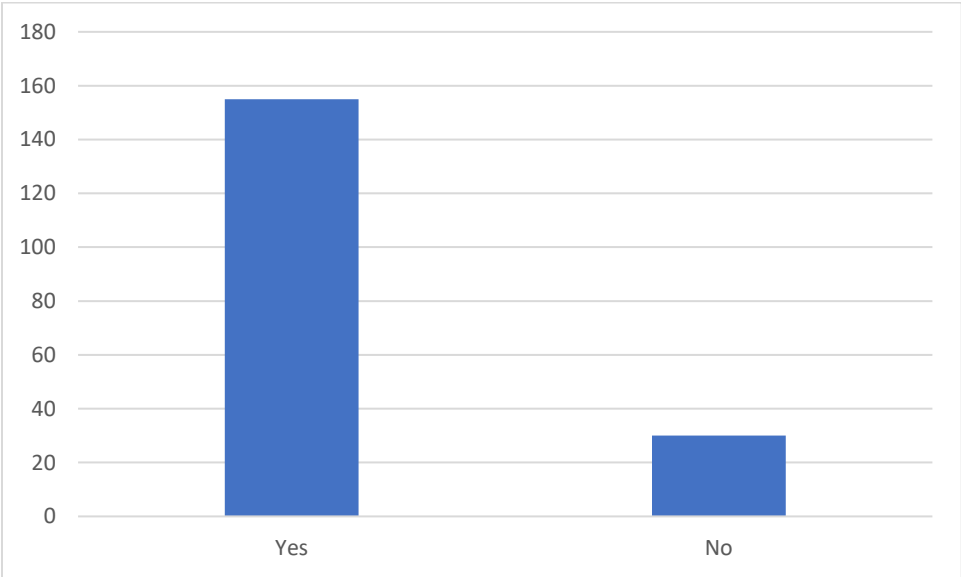


Chart 1: Number of companies that source or manufacture/provide goods or services in India

In relation to the question of companies that source or manufacture/provide goods or services in India, out of 185 participants , 155 participants told that their companies that source or manufacture/provide goods or services in India while remaining 30 participants told they do not companies that source or manufacture/provide goods or services in India.

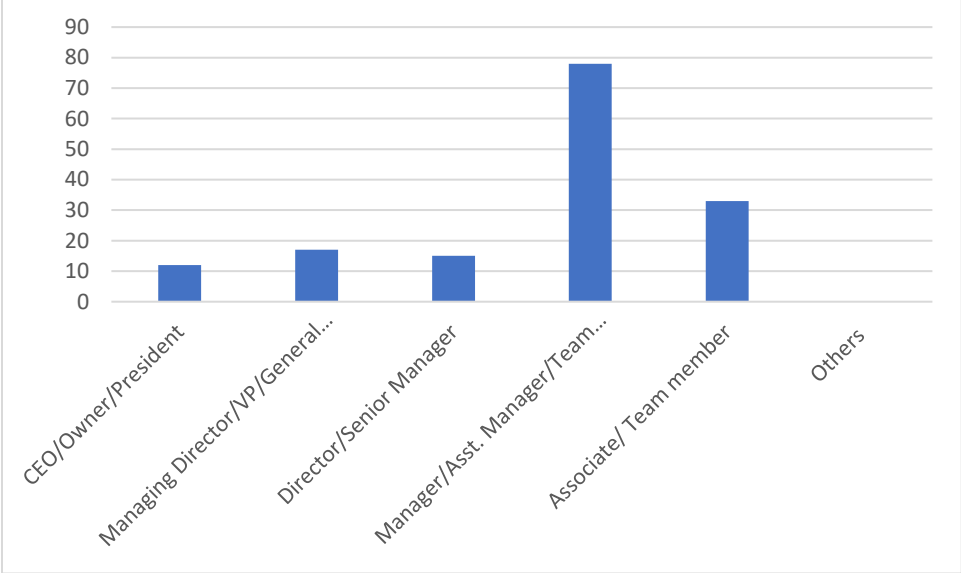


Chart 2: current position or designation at work

In relation to the current position or designation among the 155 participants considered for the primary data, 12 told that they are CEO/Owner of a company, 17 told that they fall in the category of Managing Director/VP/General Manager, 15 told that they are Director/Senior Manager, 78 told that they are Manager/Asst. Manager/Team lead and 33 are Associate/ Team member.

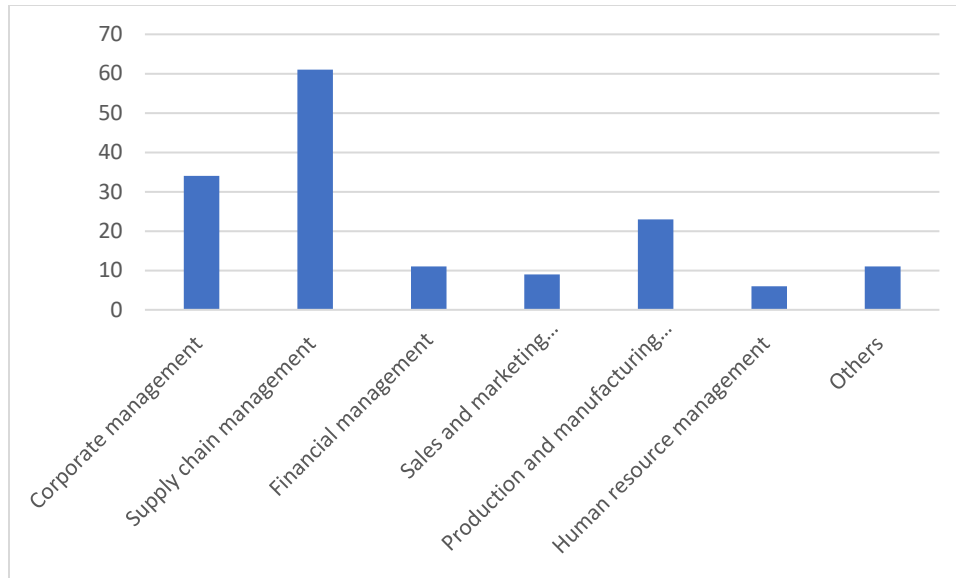


Chart 3: Functional area of work

In relation to the functional area of work, 34 told that they work in Corporate management, 61 told that they work in supply chain management, 11 told that they work in financial management domain, 9 work in sales and marketing department, 23 work in Production and manufacturing management, 6 work for Human resource management and remaining work for other work profile.

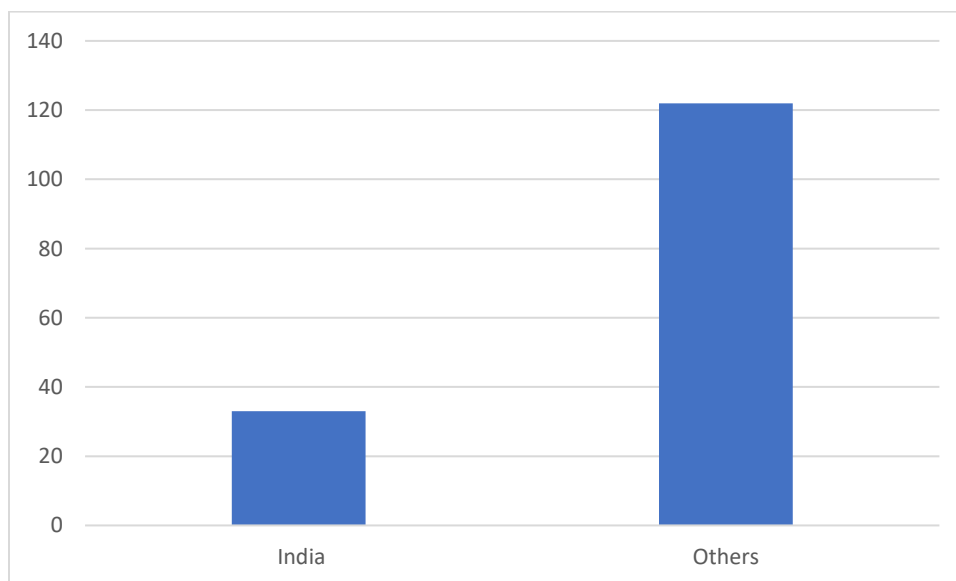


Chart 4: Headquarter of company

Among 155 respondents, 33 told that their companies have headquarter in India while 122 told others.

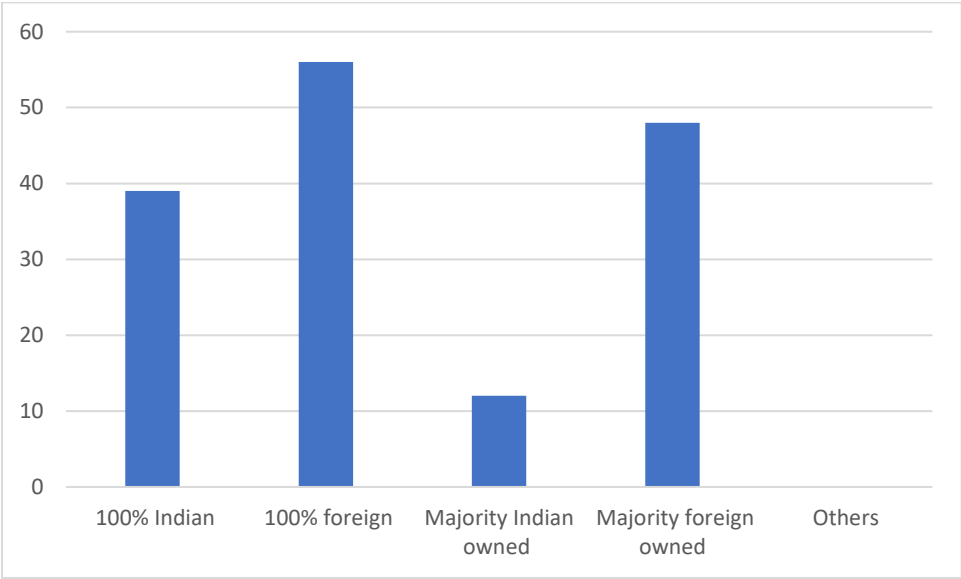


Chart 5: Ownership of company

In relation to the ownership of the company, 39 participants told that their ownership is 100% India, 56 told that their companies have 100% foreign ownership, 12 told that their companies are majority India owned, and 48 told that their companies are majority foreign owned.

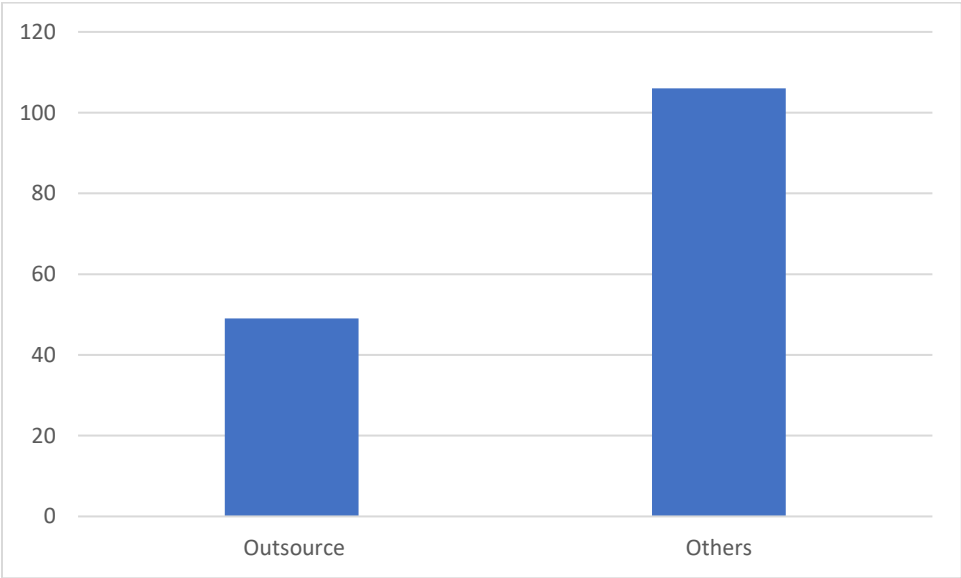


Chart 6: Nature of operation in India

Among the participants, 49 told that the nature of operation of their companies is outsources while 106 told that they have other nature of operation. The remaining 106 participants specified that their companies manufacture and produce own product or services.

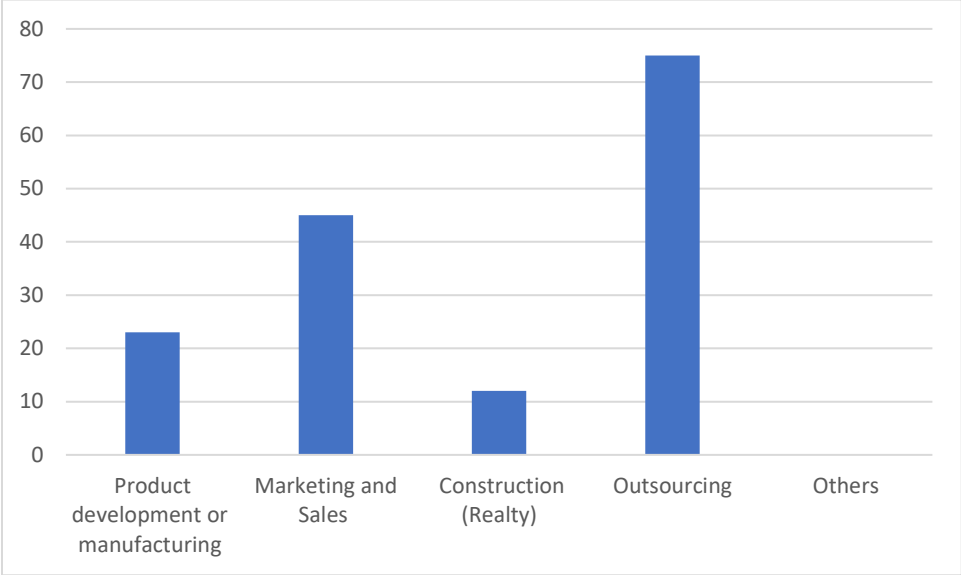


Chart 7: Company activity

In the response to the company activity, 23 participants told that their company is into product development or manufacturing, 45 participants told that their companies are in marketing and sales, 12 participants told that their companies are into construction and majority of 75 participants told that their companies are mainly into outsourcing.

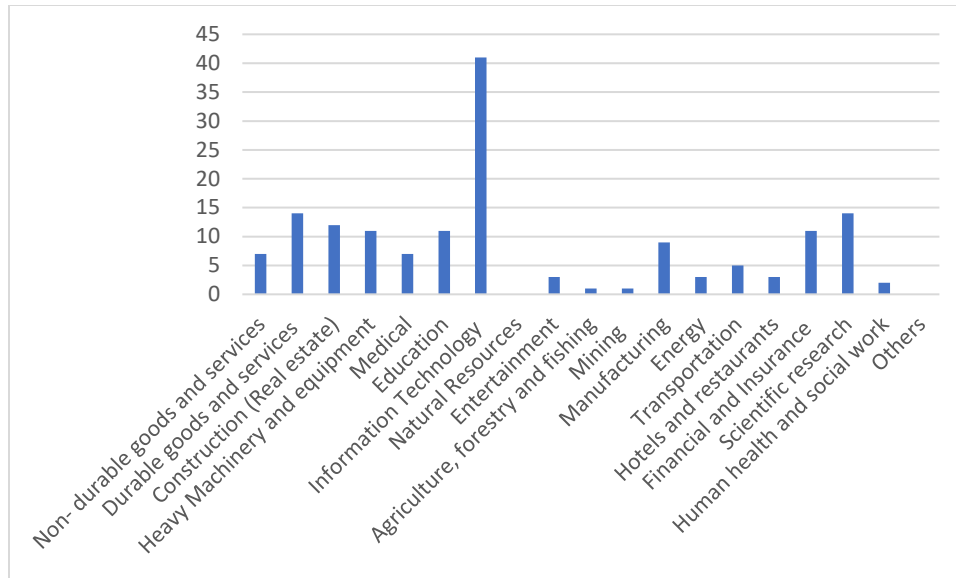


Chart 8: Category in which goods or services of company source or produce in India

In relation to the category in which goods or services of company source or produce in India, majority of the companies fall in the categories of information technology, scientific research, durable goods, construction and heavy machinery.

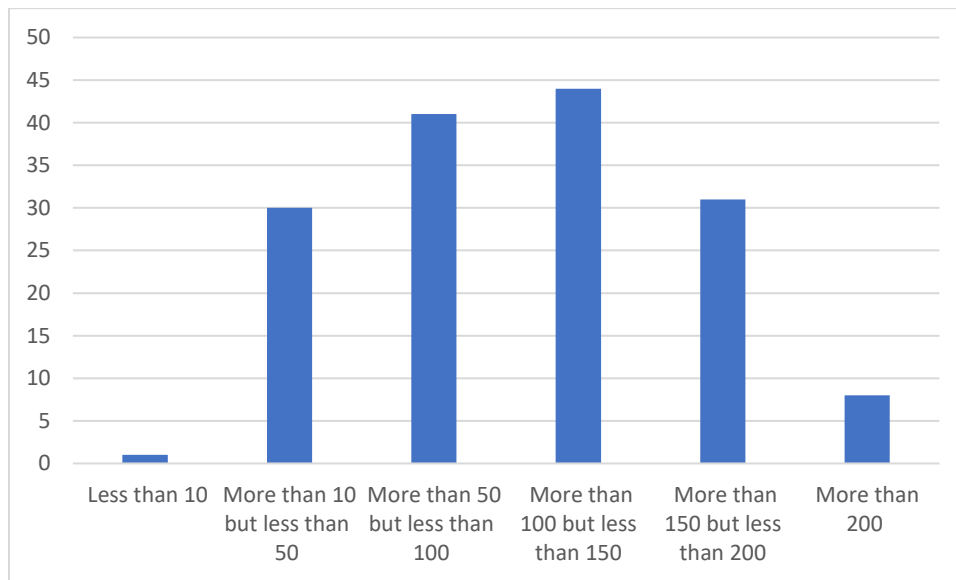


Chart 9: People employed by company in India

In the response to people employed by companies in India, 1 participant told that his/her company employees less than 10 employees, 30 participants told More than 10 but less than 50,

41 participants told More than 50 but less than 100, 44 participants told More than 100 but less than 150, 31 participants told More than 150 but less than 200 and 8 participants told More than 200.

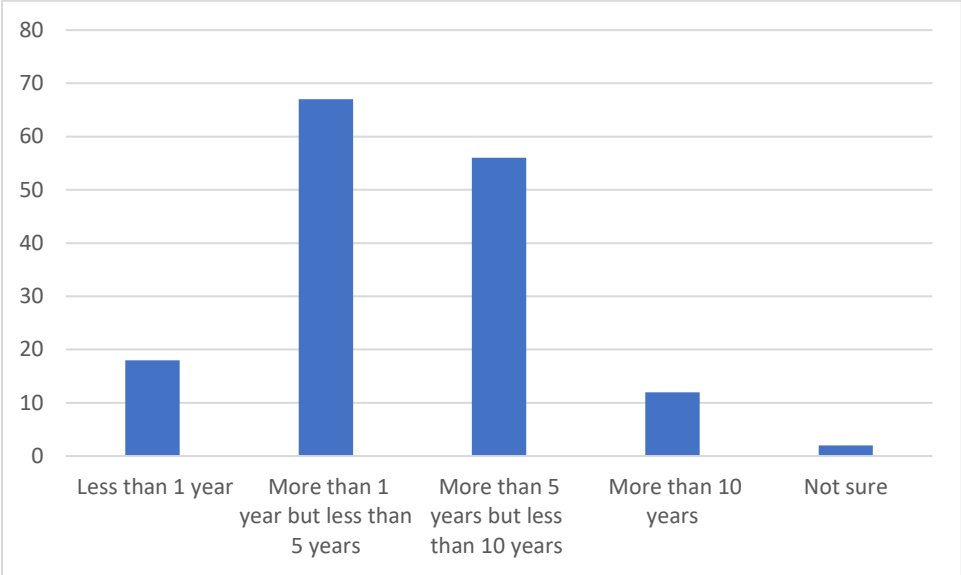


Chart 10: Period of sourcing or producing in India

In the response to the period of sourcing or producing in India, 18 participants told Less than 1 year, 67 participants told More than 1 year but less than 5 years, 56 participants told More than 5 years but less than 10 years, 12 participants told More than 10 years and 2 participants were not sure.

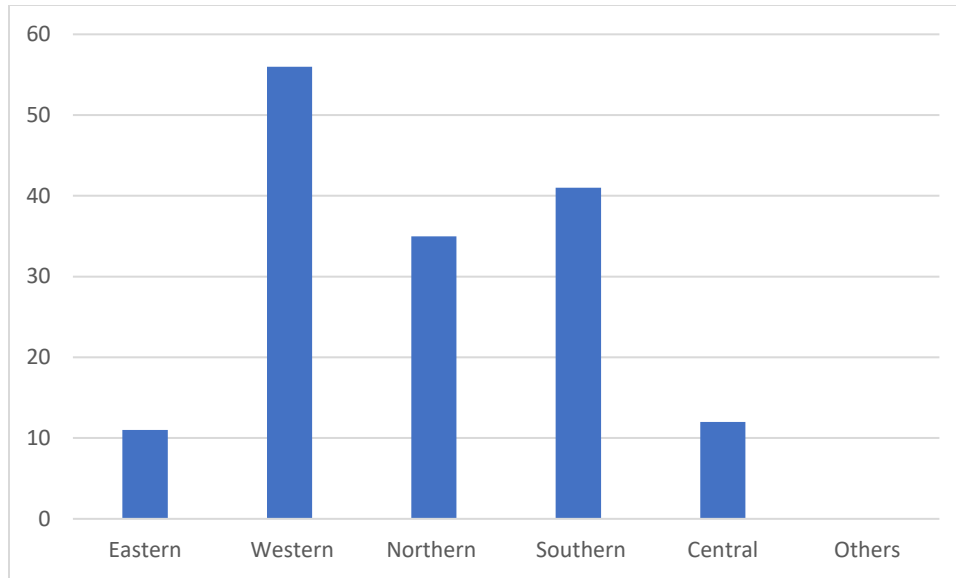


Chart 11: Part of India company has major supplier or major production facilities

In the response to the part of India company has major supplier or major production facilities, 11 participants told Eastern region, 56 participants told Western region, 35 participants told Northern region, 41 participants told Southern region, and 12 participants told Central region.

### 5.3.2 Risk related data

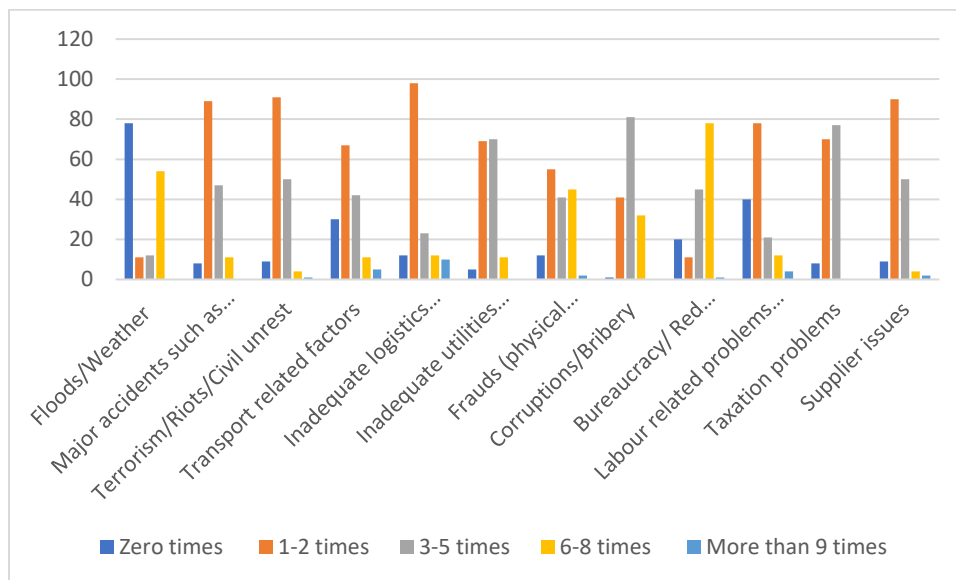


Chart 12: frequency of supply chain been affected in India because of any one or more factors

In the response to the question on the frequency of supply chain been affected in India because of any one or more factors since 2015, majority of the participants told its zero times because of floods/weather, for Major accidents such as fire/explosion/collapse of infrastructure etc, Terrorism/Riots/Civil unrest, Transport related factors, Inadequate logistics infrastructure , Frauds (physical resources/theft/intellectual property etc), Labour related problems (Strikes, unskilled labour etc), and Supplier issues the frequency is 1-2 times while for Inadequate utilities infrastructure, Corruptions/Bribery and Taxation problems, its 3-5 times .

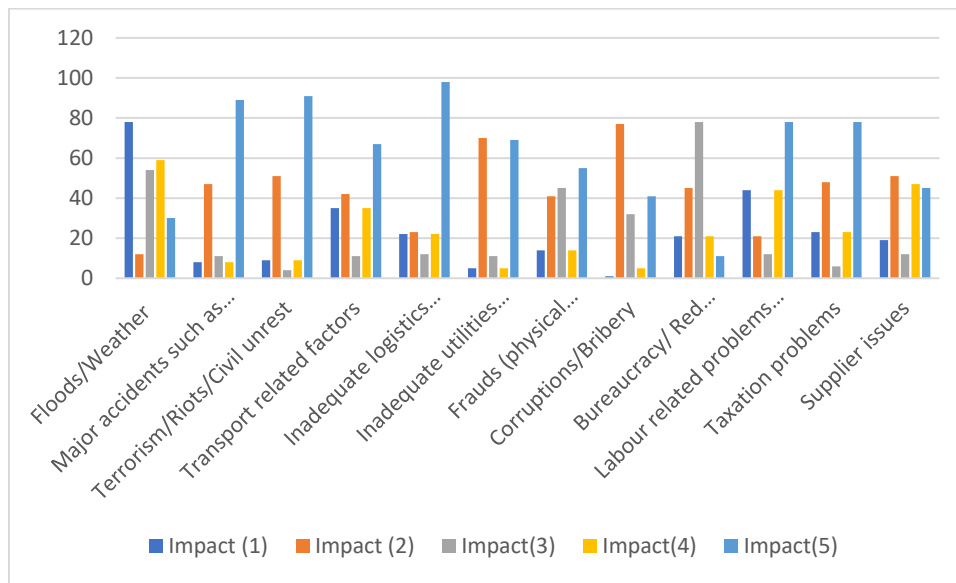


Chart 13: Operational impact because of the various factors in supply chain in India

In the response to the operational impact because of the various factors in supply chain in India, floods/weather has the lowest impact of 1, Major accidents such as fire/explosion/collapse of infrastructure etc, Terrorism/Riots/Civil unrest, Transport related factors, Inadequate logistics infrastructure , Frauds (physical resources/theft/intellectual property etc), Labour related problems (Strikes, unskilled labour etc) and Taxation problems have the highest impact of 5 while Inadequate utilities infrastructure and Corruptions/Bribery have impact of 2 and Bureaucracy/ Red Tape/complex regulatory frameworks have impact of 3.

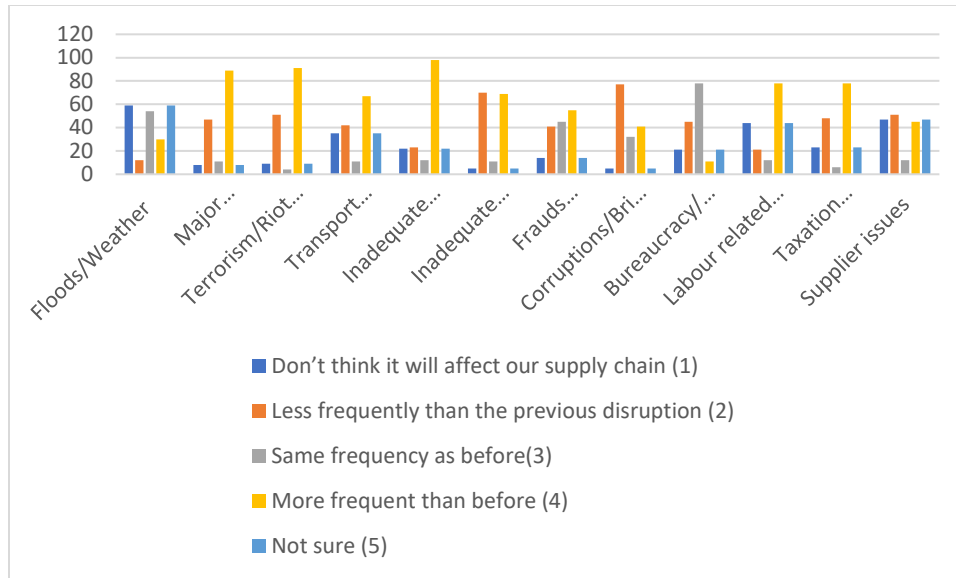


Chart 14: Frequency of disruption factor/s affect supply chain in organization in next three years in India

In the response to the frequency of disruption factor/s affect supply chain in organization in next three years in India, Major accidents such as fire/explosion/collapse of infrastructure etc, Terrorism/Riots/Civil unrest, Transport related factors, Inadequate logistics infrastructure , Frauds (physical resources/theft/intellectual property etc), Labour related problems (Strikes, unskilled labour etc) and Taxation problems have more frequency than before at the score of 4. Floods/Weather has no effect on the company as it has score of 1. Inadequate utilities infrastructure and Corruptions/Bribery are less frequent than previous disruption with the score of 2 and Bureaucracy/ Red Tape/complex regulatory frameworks has the same frequency as before with the score of 3.

### 5.4 Findings and Analysis of Findings

#### 5.4.1 General data

1) Do you company source or manufacture/provide goods or services in	
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India?	
Yes	155
No	30

Table 5: Source or manufacture/provide goods or services in India

In relation to the question of companies that source or manufacture/provide goods or services in India, out of 185 participants, 155 participants told that their companies that source or manufacture/provide goods or services in India while the remaining 30 participants told they do not companies that source or manufacture/provide goods or services in India. So, only 155 participants have been considered for generating the findings for this research. A total of only 155 participants have participated in the survey because of the voluntary participation in the survey. However, the number of participants is good enough to generate primary data for this research.

2) Please indicate your current position or designation at work	
CEO/Owner/President	12
Managing Director/VP/General Manager	17
Director/Senior Manager	15
Manager/Asst. Manager/Team lead	78
Associate/ Team member	33
Others	0

Table 6: Current position or designation at work

In relation to the current position or designation at work majority of the participants are associate/team leader and managers/asst. manager/team leaders because not many top management level professionals join social media groups. The top level professionals can be seen in professional groups or supply chain associations and chambers.

3) Please indicate your functional area of	
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work	
Corporate management	34
Supply chain management	61
Financial management	11
Sales and marketing management	9
Production and manufacturing management	23
Human resource management	6
Others	11

Table 7: Functional area of work

In relation to the functional area of work majority of the participants told that they work in supply chain management, production and manufacturing management and corporate management. The majority of participants working in these domains add to the quality of data as these professionals can provide relevant details and information in relation to supply chain and SCRM.

4) Please mention the headquarter of your company	
India	33
Others	122

Table 8: Headquarter of company

In relation to the headquarter of company very high number of respondents indicated others. It indicates that majority of the companies are international or foreign companies. The participation of employees from the companies with headquarter being not in India, turns out to be vital for

the research as the research is about finding the supply chain risk foreign companies face in India or can face while setting up business in India.

5) Please indicate the ownership of your company	
100% Indian	39
100% foreign	56
Majority Indian owned	12
Majority foreign owned	48
Others	0

Table 9: Ownership of company

In the response to the ownership of the company majority of the respondents told that they work for companies that have either 100% foreign ownership or majority of the share is owned by the foreign company. Since the research is focussed on supply chain risk for foreign companies looking to set up business in India, the respondents from foreign companies can add to the quality and aims and objectives of the research. Apart from this, there are not many Indian companies that are international, so having majority of the company ownership of foreign companies very obvious in India.

6) Please indicate the nature of operation in India	
Outsource	49
Others	106

Table 10: Nature of operation in India

In relation to the nature of operation in India, majority of the participants told others while a substantial number of participants told outsource. India is one of the most favourite destinations for outsource. Hence, outsource is one of the main operations in India. Apart from that the participants specified manufacturing and production in the others section which suggests that

most of the foreign companies either outsource or manufacture and produce goods and services in India. It makes sense for the foreign companies to outsource their functions to India as it has low cost skilled labour. Similarly, it also makes sense for the foreign companies to manufacture and produce goods and services in India as India has large middle class population as customers. The foreign companies do not need to look for customers elsewhere while manufacturing and producing goods and services in India.

7) What activity do you do in India?	
Product development or manufacturing	23
Marketing and Sales	45
Construction (Realty)	12
Outsourcing	75
Others	0

Table 11: Activity of Company

In relation to the response to the activity of company, majority of the respondents that they work for marketing and sales, product development or manufacturing and outsourcing companies. Since Indian is one of the major market for most of the companies around the world, no company will miss the chance to tap the Indian market. The foreign companies that are not manufacturing or producing products or goods in India, import products and goods that need marketing and sales channels. Some of the examples include Apple, Sony products etc. Likewise, most of the foreign companies outsource manufacturing and IT services to Indian companies or even establish their own companies to get advantage of low cost skilled workers in India.

8) Please indicate the category in which goods or services of your company source or produce in India	
Non- durable goods and services	7
Durable goods and services	14

Construction (Real estate)	12
Heavy Machinery and equipment	11
Medical	7
Education	11
Information Technology	41
Natural Resources	0
Entertainment	3
Agriculture, forestry and fishing	1
Mining	1
Manufacturing	9
Energy	3
Transportation	5
Hotels and restaurants	3
Financial and Insurance	11
Scientific research	14
Human health and social work	2
Others	0

Table 12: Category in which goods or services of company source or produce in India

In relation to the category in which goods or services of company source or produce in India, majority of the companies fall in the categories of information technology, scientific research, durable goods, construction and heavy machinery. The well-known IT talents of India has attracted many IT companies to invest and establish companies in India. Similarly, India is also known for low cost quality innovation because of which most of the foreign scientific companies have base in India. The Indian infrastructure is hotspot of investment as the country not only needs high class transport system but also hi-tech cities and infrastructures. So most of the foreign companies are interested in construction business in India.

9) How many people are	
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employed by your company in India?	
Less than 10	1
More than 10 but less than 50	30
More than 50 but less than 100	41
More than 100 but less than 150	44
More than 150 but less than 200	31
More than 200	8

Table 13: People employed by company

In the response to people employed by companies in India, 1 participant told that his/her company employees less than 10 employees, 30 participants told More than 10 but less than 50, 41 participants told More than 50 but less than 100, 44 participants told More than 100 but less than 150, 31 participants told More than 150 but less than 200 and 8 participants told More than 200. Since most of the participants are from IT and construction businesses or companies majority of employment is generated through these businesses in India.

10) How long have you been sourcing or producing in India?	
Less than 1 year	18
More than 1 year but less than 5 years	67
More than 5 years but less than 10 years	56
More than 10 years	12
Not sure	2

Table14: Time period of sourcing or producing in India

In the response to the period of sourcing or producing in India, 18 participants told Less than 1 year, 67 participants told More than 1 year but less than 5 years, 56 participants told More than 5 years but less than 10 years, 12 participants told More than 10 years and 2 participants were not sure. This trend suggests that many new companies are coming to India in the recent times.

11) In which part of India do you have your major supplier or your major production facilities?	
Eastern	11
Western	56
Northern	35
Southern	41
Central	12
Others	0

Table 15:Region of manufacturing or major supplier

In relational to the region of manufacturing or major supplier most of the companies have manufacturing units or major suppliers in Western, Northern and Southern regions of India. The Southern region of India has cities such as Hyderabad, Bengaluru and Chennai that are considered as IT hub of India and major IT outsourcing is done in the companies in this part for India. The Western and the Northern part of India are mainly manufacturing hubs for vehicles and other goods and services. The eastern part of India has most of the natural calamities while the central part of India has most of the riots, strikes, social unrest.

### 5.4.2 Risk related data

13	Since 2015, how many times supply chain has been affected in India because of any one or more factors below?	Zero times	1-2 times	3-5 times	6-8 times	More than 9 times
a)	Floods/Weather	78	11	12	54	0
b)	Major accidents such as fire/explosion/collapse of infrastructure etc	8	89	47	11	0
c)	Terrorism/Riots/Civil unrest	9	91	50	4	1
d)	Transport related factors	30	67	42	11	5
e)	Inadequate logistics infrastructure	12	98	23	12	10
f)	Inadequate utilities infrastructure	5	69	70	11	0
g)	Frauds (physical resources/theft/intellectual property etc)	12	55	41	45	2
h)	Corruptions/Bribery	1	41	81	32	0
i)	Bureaucracy/ Red Tape/complex regulatory frameworks	20	11	45	78	1
j)	Labour related problems (Strikes, unskilled labour etc)	40	78	21	12	4
k)	Taxation problems	8	70	77	0	0
l)	Supplier issues	9	90	50	4	2

Table 16: Frequency of supply chain affect in India since 2015

In the response to the question on the frequency of supply chain been affected in India because of any one or more factors since 2015, the majority of the participants told its zero times because of floods/weather, for Major accidents such as fire/explosion/collapse of infrastructure etc, Terrorism/Riots/Civil unrest, Transport related factors, Inadequate logistics infrastructure , Frauds (physical resources/theft/intellectual property etc), Labour related problems (Strikes, unskilled labour etc), and Supplier issues the frequency is 1-2 times while for Inadequate utility infrastructure, Corruptions/Bribery and Taxation problems, its 3-5 times . This indicates that

Inadequate utility infrastructure, Corruptions/Bribery and Taxation problems have been the major supply chain risk or challenges for companies since 2015.

14	Please indicate the operational impact because of the following factors in supply chain in India	Impact (1)	Impact (2)	Impact (3)	Impact (4)	Impact (5)
a)	Floods/Weather	78	12	54	59	30
b)	Major accidents such as fire/explosion/collapse of infrastructure etc	8	47	11	8	89
c)	Terrorism/Riots/Civil unrest	9	51	4	9	91
d)	Transport related factors	35	42	11	35	67
e)	Inadequate logistics infrastructure	22	23	12	22	98
f)	Inadequate utilities infrastructure	5	70	11	5	69
g)	Frauds (physical resources/theft/intellectual property etc)	14	41	45	14	55
h)	Corruptions/Bribery	1	77	32	5	41
i)	Bureaucracy/ Red Tape/complex regulatory frameworks	21	45	78	21	11
j)	Labour related problems (Strikes, unskilled labour etc)	44	21	12	44	78
k)	Taxation problems	23	48	6	23	78
l)	Supplier issues	19	51	12	47	45

Table 17: Operational impact because of the various factors in supply chain in India

In the response to the operational impact because of the various factors in the supply chain in India, floods/weather has the lowest impact of 1, Major accidents such as fire/explosion/collapse of infrastructure etc, Terrorism/Riots/Civil unrest, Transport related factors, Inadequate logistics infrastructure, Frauds (physical resources/theft/intellectual property etc), Labour related problems (Strikes, unskilled labour etc) and Taxation problems have the highest impact of 5 while Inadequate utility infrastructure and Corruptions/Bribery have the impact of 2 and

Bureaucracy/ Red Tape/complex regulatory frameworks have the impact of 3. This means Major accidents such as fire/explosion/collapse of infrastructure etc, Terrorism/Riots/Civil unrest, Transport related factors, Inadequate logistics infrastructure, Frauds (physical resources/theft/intellectual property etc), Labour related problems (Strikes, unskilled labour etc) and Taxation problems are the main causes of operational impact in companies in relation to supply chain.

15	How frequently do you think the following disruption factor/s affect supply chain in your organization in next three years in India ?	Don't think it will affect our supply chain (1)	Less frequently than the previous disruption (2)	Same frequency as before(3)	More frequent than before (4)	Not sure (5)
a)	Floods/Weather	59	12	54	30	59
b)	Major accidents such as fire/explosion/collapse of infrastructure etc	8	47	11	89	8
c)	Terrorism/Riots/Civil unrest	9	51	4	91	9
d)	Transport related factors	35	42	11	67	35
e)	Inadequate logistics infrastructure	22	23	12	98	22
f)	Inadequate utilities infrastructure	5	70	11	69	5
g)	Frauds (physical resources/theft/intellectual property etc)	14	41	45	55	14
h)	Corruptions/Bribery	5	77	32	41	5
i)	Bureaucracy/ Red Tape/complex regulatory frameworks	21	45	78	11	21
j)	Labour related problems (Strikes,	44	21	12	78	44

	unskilled labour etc)					
k)	Taxation problems	23	48	6	78	23
l)	Supplier issues	47	51	12	45	47

Table 18: Frequency of disruption factor/s affect supply chain in an organization in next three years in India

In the response to the frequency of disruption, factor/s affect the supply chain in the organization in next three years in India, Major accidents such as fire/explosion/collapse of infrastructure etc, Terrorism/Riots/Civil unrest, Transport related factors, Inadequate logistics infrastructure, Frauds (physical resources/theft/intellectual property etc), Labour related problems (Strikes, unskilled labour etc) and Taxation problems have more frequency than before at the score of 4. Floods/Weather has no effect on the company as it has score of 1. Inadequate utilities infrastructure and Corruptions/Bribery are less frequent than the previous disruption with the score of 2 and Bureaucracy/ Red Tape/complex regulatory frameworks has the same frequency as before with a score of 3. This means Major accidents such as fire/explosion/collapse of infrastructure etc, Terrorism/Riots/Civil unrest, Transport related factors, Inadequate logistics infrastructure, Frauds (physical resources/theft/intellectual property etc), Labour related problems (Strikes, unskilled labour etc) and Taxation problems are the major disruption factor/s that affect supply chain in an organization in next three years in India.

## **Chapter 6: Conclusion and Recommendation**

### ***6.1 Introduction***

The chapter includes the discussion based on the research objectives. It is based on the discussion a conclusion is derived and research question is answered. The chapter also presents recommendation for the supply chain managers and scope for further research.

### ***6.2 Research Objectives Revisited***

The main objective of the research is to develop a methodology for assessing the supply chain risks in India. The other objectives of the research are;

- a) To examine the supply chain management in India

Supply chain management is mainly used in India to maximize customer value and attain a sustainable competitive advantage. However, the supply chain management practice helps companies to have an effective and efficient supply chain system. The SCM allows companies to create a balance between supply and demand, which is vital in the sustainability of the companies. The SCM integrates the different supply chain stakeholders to have a seamless supply chain system that can help companies to achieve cost efficiency and also enhance the value of product or services for the final buyer.

Even though the SCM practice can be different across different businesses or industries in India, the purpose of SCM is same for each industry or business. SCM mainly integrates supply and demand management within and across companies and helps companies the planning and management of all the activities in the supply chain system from sourcing and procurement, conversion and management of logistics.

- b) To understand the supply chain risks in India

Most of the previous research has highlighted legal challenges, tax regime, intellectual property rights, dispute resolution as the most common challenges for foreign companies looking to set up business in India. However, factors such as floods/weather, major accidents such as such as fire/explosion/collapse of infrastructure etc, Terrorism/Riots/Civil unrest, Transport related factors, Inadequate logistics infrastructure, Inadequate utilities infrastructure, Frauds (physical resources/theft/intellectual property etc), Corruptions/Bribery, Bureaucracy/ Red Tape/complex regulatory frameworks, Labour related problems (Strikes, unskilled labour etc), Taxation problems and Supplier issues will still be supply chain risks in India but the impact of these risks will reduce in future. The primary research suggests that Major accidents such as fire/explosion/collapse of infrastructure etc, Terrorism/Riots/Civil unrest, Transport related factors, Inadequate logistics infrastructure, Frauds (physical resources/theft/intellectual property etc), Labour related problems (Strikes, unskilled labour etc) and Taxation problems are the major disruption factor/s that affect supply chain in an organization in next three years in India. In future, the impact of disruptive factors will change as per the change in external environment that has huge influence on supply chain in India.

### ***6.3 Recommendation***

The recommendation can be divided into recommendation for supply chain managers and recommendation for future research.

In relation to supply chain managers, it is important for supply chain managers to keep changing the SCM as per the changes in the external and internal environment. The external environment has huge influence on the SCM and the kind of SCR. The adoption of universal SCRM practice in different markets and products and services cannot help companies to achieve the purpose of supply chain management. In order to achieve SCM objectives companies need to create a balance between supply and demand and also establish relationship among the supply chain stakeholders so that the company is aware about the position of each function associated with supply chain system. An integrated supply chain system can be instrumental for companies in mapping the risk and plan strategies to mitigate supply chain risk. The supply chain risks will be

the same in India in future as well but the level of impact will reduce with improvement in the supply chain framework in India.

In relation to the scope for future research, the researcher can apply “MIAMI framework” only to risks related to natural disasters and man-made damages. Apart from this, the inclusion of interview as another medium of data collection along with online survey provides better perspective to the research. The supply chain risk can be business or industry specific so adoption of case study in a specific industry or business makes the research more specific.

#### ***6.4 Conclusion***

Legal challenges, tax regime, intellectual property rights, dispute resolution, strikes, riots, social unrest, and natural calamities are some of the most common supply chain risks for foreign companies looking to set up business in India. However, the success of foreign companies heavily depends on their ability to understand the relationship and build specific formal and informal networks.

The positive economic outlook, domestic market, rising middle-class population, and improving the “ease of doing business” index are major attractions for foreign companies to invest in India. So, it is important for the foreign companies to understand the supply chain risks that were present before and could be seen in the future. Inadequate utility infrastructure, Corruptions/Bribery, and Taxation problems have been major supply chain risk or challenges for companies since 2015, however, Major accidents such as fire/explosion/collapse of infrastructure etc, Terrorism/Riots/Civil unrest, Transport related factors, Inadequate logistics infrastructure, Frauds (physical resources/theft/intellectual property etc), Labour related problems (Strikes, unskilled labour etc) and Taxation problems are the main causes of operational impact in companies in relation to supply chain. The research further suggests that Major accidents such as fire/explosion/collapse of infrastructure etc, Terrorism/Riots/Civil unrest, Transport related factors, Inadequate logistics infrastructure, Frauds (physical resources/theft/intellectual property etc), Labour related problems (Strikes, unskilled labour etc) and Taxation problems are the major disruption factor/s that affect supply chain in an organization in next three years in India.

Irrespective of the supply chain risks, the foreign companies need to understand that it is important for companies to keep their SCRM practices updating as per the requirement and changes in the external environment. Companies cannot treat “supply chain security as a destination but a journey” and thus companies need to make itself competent to overcome any supply chain risks.

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## Appendix:

### *Appendix 1: Questionnaire – Draft Copy*

#### A. Supply Chain Risks in India

1) Do you company source or manufacture/provide goods or services in India?

Yes

No

(If your answer is “No” please skip to the end of the survey)

2) Please indicate your current position or designation at work

CEO/Owner/President

Managing Director/VP/General Manager

Director/Senior Manager

Manager/Asst. Manager/Team lead

Associate/ Team member

Others \_\_\_\_\_ (Please specify)

3) Please indicate your functional area of work

Corporate management

Supply chain management

Financial management

Sales and marketing management

Production and manufacturing management

Human resource management

Others \_\_\_\_\_ (Please specify)

4) Please indicate to which category your company generally falls into

- Non- durable goods and services
- Durable goods and services
- Construction (Real estate)
- Heavy Machinery and equipment
- Medical
- Education
- Information Technology
- Natural Resources
- Entertainment
- Agriculture, forestry and fishing
- Mining
- Manufacturing
- Energy
- Transportation
- Hotels and restaurants
- Financial and Insurance
- Scientific research
- Human health and social work
- Others \_\_\_\_\_ (Please specify)

5) Please mention the headquarter of your company

- India
- Others \_\_\_\_\_ (Please specify)

6) Please indicate the ownership of your company

- 100% Indian
- 100% foreign

- Majority Indian owned
- Majority foreign owned
- Others \_\_\_\_\_ (Please specify)

7) Please indicate the nature of operation in India

- Manufacture and produce own product or services
- Outsource
- Others \_\_\_\_\_ (Please specify)

8) What activity do you do in India?

- Product development or manufacturing
- Marketing and Sales
- Construction (Realty)
- Outsourcing
- Others \_\_\_\_\_ (Please specify)

9) Please indicate the category in which goods or services of your company source or produce in India

- Non- durable goods and services
- Durable goods and services
- Construction (Real estate)
- Heavy Machinery and equipment
- Medical
- Education
- Information Technology
- Natural Resources
- Entertainment
- Agriculture, forestry and fishing
- Mining
- Manufacturing

- Energy
- Transportation
- Hotels and restaurants
- Financial and Insurance
- Scientific research
- Human health and social work
- Others \_\_\_\_\_ (Please specify)

10) How many people are employed by your company in India?

- Less than 10
- More than 10 but less than 50
- More than 50 but less than 100
- More than 100 but less than 150
- More than 150 but less than 200
- More than 200

11) How long have you been sourcing or producing in India?

- Less than 1 year
- More than 1 year but less than 5 years
- More than 5 years but less than 10 years
- More than 10 years
- Not sure

12) In which part of India do you have your major supplier or your major production facilities?

- Eastern

- Western
- Northern
- Southern
- Central
- Others \_\_\_\_\_ (Please specify)

B. Risk related questions

<i>(Please tick as appropriate based on the reasons of disruptions below)</i>						
		Zero times	1-2 times	3-5 times	6-8 times	More than 9 times
<b>13</b>	<b>Since 2015, how many times supply chain has been affected in India because of any one or more factors below?</b>					
a)	Floods/Weather	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b)	Major accidents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c)	Terrorism/Riots/Civil unrest	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d)	Transport related factors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e)	Inadequate logistics infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f)	Inadequate utilities infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g)	Frauds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h)	Corruptions/Bribery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

i)	Bureaucracy/ Red Tape/complex regulatory frameworks	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
j)	Labour related problems	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
k)	Taxation problems	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
l)	Supplier issues	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

		No Impact (1)	Minor Impact(2)	Moderate Impact(3)	Major Impact(4)	Catastrophic Impact(5)
<b>14</b>	<b>Please indicate the operational impact because of the following factors in supply chain in India</b>					
a)	Floods/Weather	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b)	Major accidents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c)	Terrorism/Riots/Civil unrest	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d)	Transport related factors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e)	Inadequate logistics infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f)	Inadequate utilities infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

g)	Frauds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h)	Corruptions/Bribery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i)	Bureaucracy/ Red Tape/complex regulatory frameworks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j)	Labour related problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k)	Taxation problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l)	Supplier issues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

		Don't think it will affect our supply chain (1)	Less frequently than the previous disruption (2)	Same frequency as before(3)	More frequent than before (4)	Not sure (5)
15	<b>How frequently do you think the following disruption factor/s affect</b>					

	<b>supply chain in your organization in next three years in India ?</b>	
a)	Floods/Weather	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
b)	Major accidents	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
c)	Terrorism/Riots/Civil unrest	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
d)	Transport related factors	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
e)	Inadequate logistics infrastructure	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
f)	Inadequate utilities infrastructure	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
g)	Frauds	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
h)	Corruptions/Bribery	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
i)	Bureaucracy/ Red Tape/complex regulatory frameworks	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
j)	Labour related problems	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
k)	Taxation problems	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
l)	Supplier issues	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

*Appendix 2: Questionnaire Final Copy*

C. Supply Chain Risks in India

1) Do you company source or manufacture/provide goods or services in India?

Yes

No

(If your answer is “No” please skip to the end of the survey)

2) Please indicate your current position or designation at work

CEO/Owner/President

Managing Director/VP/General Manager

Director/Senior Manager

Manager/Asst. Manager/Team lead

Associate/ Team member

Others \_\_\_\_\_ (Please specify)

3) Please indicate your functional area of work

Corporate management

Supply chain management

- Financial management
- Sales and marketing management
- Production and manufacturing management
- Human resource management
- Others \_\_\_\_\_ (Please specify)

4) Please mention the headquarter of your company

- India
- Others \_\_\_\_\_ (Please specify)

5) Please indicate the ownership of your company

- 100% Indian
- 100% foreign
- Majority Indian owned
- Majority foreign owned
- Others \_\_\_\_\_ (Please specify)

6) Please indicate the nature of operation in India

- Manufacture and produce own product or services
- Outsource
- Others \_\_\_\_\_ (Please specify)

7) What activity do you do in India?

- Product development or manufacturing
- Marketing and Sales
- Construction (Realty)
- Outsourcing
- Others \_\_\_\_\_ (Please specify)

8) Please indicate the category in which goods or services of your company source or produce in India

- Non- durable goods and services
- Durable goods and services
- Construction (Real estate)
- Heavy Machinery and equipment
- Medical
- Education
- Information Technology
- Natural Resources
- Entertainment
- Agriculture, forestry and fishing
- Mining
- Manufacturing
- Energy
- Transportation
- Hotels and restaurants
- Financial and Insurance
- Scientific research
- Human health and social work
- Others \_\_\_\_\_ (Please specify)

9) How many people are employed by your company in India?

- Less than 10
- More than 10 but less than 50
- More than 50 but less than 100
- More than 100 but less than 150

- More than 150 but less than 200
- More than 200

10) How long have you been sourcing or producing in India?

- Less than 1 year
- More than 1 year but less than 5 years
- More than 5 years but less than 10 years
- More than 10 years
- Not sure

11) In which part of India do you have your major supplier or your major production facilities?

- Eastern
- Western
- Northern
- Southern
- Central
- Others \_\_\_\_\_ (Please specify)

D. Risk related questions

<i>(Please tick as appropriate based on the reasons of disruptions below)</i>						
		Zero times	1-2 times	3-5 times	6-8 times	More than 9 times

13	Since 2015, how many times supply chain has been affected in India because of any one or more factors below?	
a)	Floods/Weather	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
b)	Major accidents such as fire/explosion/collapse of infrastructure etc	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
c)	Terrorism/Riots/Civil unrest	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
d)	Transport related factors	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
e)	Inadequate logistics infrastructure	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
f)	Inadequate utilities infrastructure	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
g)	Frauds (physical resources/theft/intellectual property etc)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
h)	Corruptions/Bribery	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
i)	Bureaucracy/ Red Tape/complex regulatory frameworks	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
j)	Labour related problems (Strikes, unskilled labour etc)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
k)	Taxation problems	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
l)	Supplier issues	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

		No Impact (1)	Minor Impact(2 )	Moderate Impact(3)	Major Impact(4 )	Catastrophic Impact(5)
<b>14</b>	<b>Please indicate the operational impact because of the following factors in supply chain in India</b>					
a)	Floods/Weather	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b)	Major accidents such as fire/explosion/collapse of infrastructure etc	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c)	Terrorism/Riots/Civil unrest	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d)	Transport related factors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e)	Inadequate logistics infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f)	Inadequate utilities infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g)	Frauds (physical resources/theft/intellectual property etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h)	Corruptions/Bribery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i)	Bureaucracy/ Red Tape/complex regulatory frameworks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j)	Labour related problems (Strikes,	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	unskilled labour etc)	
k)	Taxation problems	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
l)	Supplier issues	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

		Don't think it will affect our supply chain (1)	Less frequently than the previous disruption (2)	Same frequency as before(3)	More frequent than before (4)	Not sure (5)
<b>15</b>	<b>How frequently do you think the following disruption factor/s affect supply chain in your organization in next three years in India ?</b>					
a)	Floods/Weather	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>				
b)	Major accidents such as fire/explosion/collapse of infrastructure etc	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>				
c)	Terrorism/Riots/Civil unrest	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>				
d)	Transport related factors	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>				
e)	Inadequate logistics infrastructure	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>				
f)	Inadequate utilities infrastructure	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>				

g)	Frauds (physical resources/theft/intellectual property etc)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
h)	Corruptions/Bribery	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
i)	Bureaucracy/ Red Tape/complex regulatory frameworks	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
j)	Labour related problems (Strikes, unskilled labour)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
k)	Taxation problems	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
l)	Supplier issues	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

**Appendix 3: Introduction letter/Consent letter**

**Research topic : Challenges for overseas firm setting up in India. An analysis from supply chain perspective**

I am collecting primary data through this online survey for the research work that is a part of my Master's programme at Griffith College Dublin. The dissertation finds out “ What is the most effective method for treating supply chain risk management by applying MIAMI framework in India?”. Moreover, the aim of the research is to develop a methodology for assessing the supply chain risks in India. The aim can be achieved through the following objectives;

- a) To examine the supply chain management practice in India
- b) To understand the supply chain risks in India
- c) To highlight the supply chain risks for foreign companies in India
- d) To implement “MIAMI” framework

I request you all to participate in this survey and help me generate the primary data required to generate the findings for the research.

Furthermore, I would like to highlight that the nature of research is academic and the participation in the survey is voluntary. I would also like to confirm that all the data collected in this research would be kept confidential.

I will be very much thankful to you for your time and efforts in participating in this survey.

If you have any query or interest in knowing about the result of the research, please email me at [purnarao560@gmail.com](mailto:purnarao560@gmail.com).

Thank you once again.

## ***Appendix 4: Data Calculation***

### **A. Supply Chain Risks in India**

1) Do you company source or manufacture/provide goods or services in India?	
Yes	15
No	5
	30

(If your answer is “No” please skip to the end of the survey)

2) Please indicate your current position or designation at work	
CEO/Owner/President	12
Managing Director/VP/General Manager	17
Director/Senior Manager	15
Manager/Asst. Manager/Team lead	78
Associate/ Team member	33
Others	0

3) Please indicate your functional area of work	
Corporate management	34
Supply chain management	61
Financial management	11
Sales and marketing management	9
Production and manufacturing management	23
Human resource management	6
Others	11

4) Please mention the headquarter of your company	
India	33
	12
Others	2

5) Please indicate the ownership of your company	
100% Indian	39
100% foreign	56
Majority Indian owned	12
Majority foreign owned	48
Others	0

6) Please indicate the nature of operation in India	
Manufacture and produce own product or services	
Outsource	49
Others	10
6	
7) What activity do you do in India?	
Product development or manufacturing	23
Marketing and Sales	45
Construction (Realty)	12
Outsourcing	75
Others	0

8) Please indicate the category in which goods or services of your company source or produce in India	
Non- durable goods and services	7
Durable goods and services	14
Construction (Real estate)	12
Heavy Machinery and equipment	11
Medical	7
Education	11
Information Technology	41
Natural Resources	0
Entertainment	3
Agriculture, forestry and fishing	1

Mining	1
Manufacturing	9
Energy	3
Transportation	5
Hotels and restaurants	3
Financial and Insurance	11
Scientific research	14
Human health and social work	2
Others	0

9) How many people are employed by your company in India?	
Less than 10	1
More than 10 but less than 50	30
More than 50 but less than 100	41
More than 100 but less than 150	44
More than 150 but less than 200	31
More than 200	8

10) How long have you been sourcing or producing in India?	
Less than 1 year	18
More than 1 year but less than 5 years	67
More than 5 years but less than 10 years	56
More than 10 years	12
Not sure	2

11) In which part of India do you have your major supplier or your major production facilities?	
Eastern	11

Western	56
Northern	35
Southern	41
Central	12
Others	0

B. Risk related questions						
1	Since 2015, how many times	Zero	1-2 times	3-5	6-8	More
3	supply chain has been affected in India because of any one or more factors below?	times		times	times	than 9
						times
a)	Floods/Weather		11	12	54	78
b)	Major accidents such as fire/explosion/collapse of infrastructure etc		89	47	11	8
c)	Terrorism/Riots/Civil unrest		91	51	4	9
d)	Transport related factors		67	42	11	35
e)	Inadequate logistics infrastructure		98	23	12	22
f)	Inadequate utilities infrastructure		69	70	11	5
g)	Frauds (physical resources/theft/intellectual property etc)		55	41	45	14
h)	Corruptions/Bribery		41	81	32	1
i)	Bureaucracy/ Red Tape/complex regulatory frameworks		11	45	78	21
j)	Labour related problems (Strikes, unskilled labour etc)		78	21	12	44
k)	Taxation problems		78	77	0	0
l)	Supplier issues		98	51	6	0

1 4	Please indicate the operational impact because of the following factors in supply chain in India	Impact (1)	Impact (2)	Impact(3)	Impact(4)	Impact(5)
a)	Floods/Weather	78	12	54	59	30
b)	Major accidents such as fire/explosion/collapse of infrastructure etc	8	47	11	8	89
c)	Terrorism/Riots/Civil unrest	9	51	4	9	91
d)	Transport related factors	35	42	11	35	67
e)	Inadequate logistics infrastructure	22	23	12	22	98
f)	Inadequate utilities infrastructure	5	70	11	5	69
g)	Frauds (physical resources/theft/intellectual property etc)	14	41	45	14	55
h)	Corruptions/Bribery	1	77	32	5	41
i)	Bureaucracy/ Red Tape/complex regulatory frameworks	21	45	78	21	11
j)	Labour related problems (Strikes, unskilled labour etc)	44	21	12	44	78
k)	Taxation problems	23	48	6	23	78
l)	Supplier issues	19	51	12	47	45
1 5	How frequently do you think the following disruption factor/s affect supply chain in your organization in next three years in India ?	Don't think it will affect our supply	Less frequently than the previous disruption	Same frequency as before(3)	More frequent than before (4)	Not sure (5)

		chain (1)	(2)			
a)	Floods/Weather	59	12	54	30	59
b)	Major accidents such as fire/explosion/collapse of infrastructure etc	8	47	11	89	8
c)	Terrorism/Riots/Civil unrest	9	51	4	91	9
d)	Transport related factors	35	42	11	67	35
e)	Inadequate logistics infrastructure	22	23	12	98	22
f)	Inadequate utilities infrastructure	5	70	11	69	5
g)	Frauds (physical resources/theft/intellectual property etc)	14	41	45	55	14
h)	Corruptions/Bribery	5	77	32	41	5
i)	Bureaucracy/ Red Tape/complex regulatory frameworks	21	45	78	11	21
j)	Labour related problems (Strikes, unskilled labour etc)	44	21	12	78	44
k)	Taxation problems	23	48	6	78	23
l)	Supplier issues	47	51	12	45	47

