CHALLENGES OF LOGISTICS IN INDIAN PHARMACEUTICAL INDUSTRY

Research dissertation presented in partial fulfilment of the requirements for the degree of

MSc in International Procurement and Supply Management

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Candidate Declaration

Candidate Name: Vivek Chandran

I declare that the dissertation entitled: The **CHALLENGES OF LOGISTICS IN INDIAN PHARMACEUTICAL INDUSTRY** submitted for the degree of **MSc in International Procurement and Supply Management** is the result of my own work and that where reference is made to the work of others, due acknowledgement is given.

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Acknowledgement

Table of Contents

List of figures

CHALLENGES OF LOGISTICS IN INDIAN PHARMACEUTICAL INDUSTRY

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Abstract

The current research has focused on exploring the attributes and challenges that are essential in ensuing an effective logistics in Indian pharmaceutical industry. Logistics are considered as an integral part of pharmaceutical companies in India. It plays a key role in ensuring timely delivery of drugs and medical equipment. The Indian pharmaceutical industry has significant opportunity for making improvement in its products. These products are improved through deep research and various clinical trials for distributing it in the global forum. Thus, it can be stated that logistics and supply chain management systems is necessary as it will help in attracting customer loyalty in the market and building brand image. The research has undertaken a background research on the context of pharmaceutical industry in India. Data collection has also been conducted with appropriate research approaches and based on these relevant finings have been drawn. The last chapter links the objectives of the research with the finds of the research.

Chapter 1: Introduction

1.1 Introduction

The Indian economy is growing rapidly in the global platform, which is putting huge pressure and demand on its productive infrastructure. The development of infrastructure of roads, ports, power and water along with digital infrastructure is crucial for growth of an economy. Therefore, Indian logistic sector focuses on implying innovation practices for ensuring that both the private and public sector operate businesses at higher growth rates. Thus, the current research study will present the status of the logistic sector in India through focusing on various dimensions associated with it. On the other hand, the research worker considered the 'Pharmaceutical Industry' for shedding light on the challenges and issues faced by the logistic industry. In addition to it, the research paper will reflect on the factors and attributes that are required to be considered by the logistics sector of India for rendering quality pharmacy products at affordable prices to the customers. Impact of applying effective business models in respect to improving logistic infrastructure in Indian pharmaceutical industry will be discussed in the research study.

1.2 Research background

The Indian logistic sector includes inbound as well as outbound segments of service and manufacturing supply chains. It has been evident that logistic infrastructure has obtained huge attention from the industry and policy makers. Hence, extensive demand for effective logistics and supply chain is crucial and imperative for growth and development of businesses in the long run. The key purpose of logistics is to distribute goods and services within a specific duration (Mehta and Rajan, 2017). The Indian Pharmaceutical industry is growing appropriately due to high investment. India is recognised to be the third largest manufacturer of pharmaceuticals regarding volume. Thus, it is important for the Indian pharmaceuticals industry to focus on using appropriate logistics and supply chain management to obtain required raw materials to attain effective comparative advantage in the global market. With the help of effective logistics, the pharmaceuticals sector of India will be able to create a strong brand position in the global market. However, the pharmaceutical industry faces challenges due to ineffective logistics and supply chain management (Chakraborty, *et al.* 2020). This has been observed that India's pharmaceutical sector is price sensitive and fragmented due to entry of firms and leaving the market at a higher rate compared to other nations. On the other hand, low visibility of the cold chain creates hindrance for Indian pharmaceuticals to estimate cost of transport. Lack of ineffective logistics, the

pharmaceutical companies is unable to attract potential customers towards the business (Roy and Kumar, 2017). In addition to it, lack of appropriate infrastructure creates hindrance in the logistic operation for the Indian pharmaceutical companies in the long run.

1.3 Research rationale

The Indian pharmaceutical industry continues to grow through developing and improving products. The pharmaceutical products are improved through extensive research and clinical trials for distributing it in the global forum. Hence, it is important for the pharmacy companies to obtain effective logistics and supply chain management systems as it will help in attracting customer loyalty in the market. Drugs are known to be sensitive to moisture and vary in temperature. Therefore, paying attention to the storage and transportation of pharmaceutical products is necessary for the Indian pharmaceutical sector (de Campos, *et al.* 2017). Cold chain logistics is recognised to be a widely used form of transport by the logistic sector in order to deliver quality medicinal products to the customer. Several challenges are faced by Indian pharmaceutical companies due to ineffective logistics (Karim and Adnan, 2016). The research fellow will discuss factors and aspects that lead to logistic challenges for Indian pharmaceutical industry.

1.4 Research aim

The primary aim of the research study is to identify and examine attributes leading to ineffective logistics in Indian pharmaceutical sector. It is imperative for understanding the effectiveness of logistic and supply chain management systems used by pharmaceutical companies for rendering high quality products and services. In addition to that, there is a requirement for gaining in-depth knowledge about the logistic operation of Indian pharmaceutical sector for analysing challenges and difficulties faced in the long run.

1.5 Research objective

The research fellow is required to conduct the research appropriately through maintaining and following specific objectives. The research objectives are mentioned below:
- Identifying the importance of logistic in pharmaceutical industry
- Identification and analysis of factors associated with logistics, which will be helpful for improving business operation of pharmaceutical sector of India
- Examining challenges and difficulties related to logistics faced by Indian pharmaceutical industry
- Development of appropriate strategies and methods for improving logistics of Indian pharmaceutical sector

- Observing outcome of the strategies to improve logistic of pharmaceutical industry of India

1.6 Research question

To acquire effective outcomes from the research process, the research worker is required to answer following research questions. The research questions are:

- What is the importance and impact of logistics in the pharmaceutical industry?
- What are the factors related to logistics that help in improving business operation of the pharmaceutical industry of India?
- What are the key challenges and difficulties that are faced by Indian pharmaceutical sector due to lack of effective logistics?
- In what ways can logistics of Indian pharmaceutical industry be improved and enhanced?
- What are the outcomes of the strategies that are implemented in contact with logistics in the business operation of Indian pharmaceutical industry?

1.7 Research significance

Logistics play a significant role for the pharmaceutical industry for enhancing its economic growth and performance. Effective logistics and supply chain management helps in distributing high quality pharmaceutical products and services to the customers. Indian pharmaceutical companies face severe difficulties due to an ineffective cold supply chain (Narayana, *et al.* 2019). Hence, the companies are unable to deliver quality products at affordable prices. It is imperative for the pharmaceutical industry to consider methods and strategies for improving logistics as it will help in enhancing economic growth. However, India being one of largest producers of medicinal products faces challenges and issues due to inappropriate logistics (Huq, *et al.* 2016). Thus, the research study will shed light on different dimensions of issues associated with logistics of the pharmaceutical industry of India. It will further help in acquiring accurate data and knowledge in respect to the current topic.

Chapter 2: Literature review

2.1 Introduction

Logistics management has been witnessing continuous attention from researchers as it is considered as an important aspect in managing the supplies, resources and logistics for the pharmaceutical industries globally (Abbas and Farooquie, 2020). This section has discussed various factors that influence the logistics management of a pharmaceutical industry in India by addressing the challenges faced by the industry, which has a long-term impact on the industry. For this, this section has reviewed past studies for gathering complete knowledge regarding the topic by analysing various facts and concepts from past studies, articles, journals, news reports, company reports and governmental portals. Furthermore, various gaps in literature have been identified that have created restrictions to gather ideas based on the study in an effective way.

2.2 Previous literature

Besides, it has been acquired from the past studies that logistics is considered as one of the most important parts of getting better economic growth. It helps to manage the flow of products by bringing integration in the process of material handling, packaging, warehouse management, inventory controls and supply chain management. It has been witnessed that the pharmaceutical industry of India has been benefited by the involvement of advanced strategies related to the logistics. Thus, with time, the logistics sector of India has taken a stable position and it is prioritised effectively (Akhter, 2020).
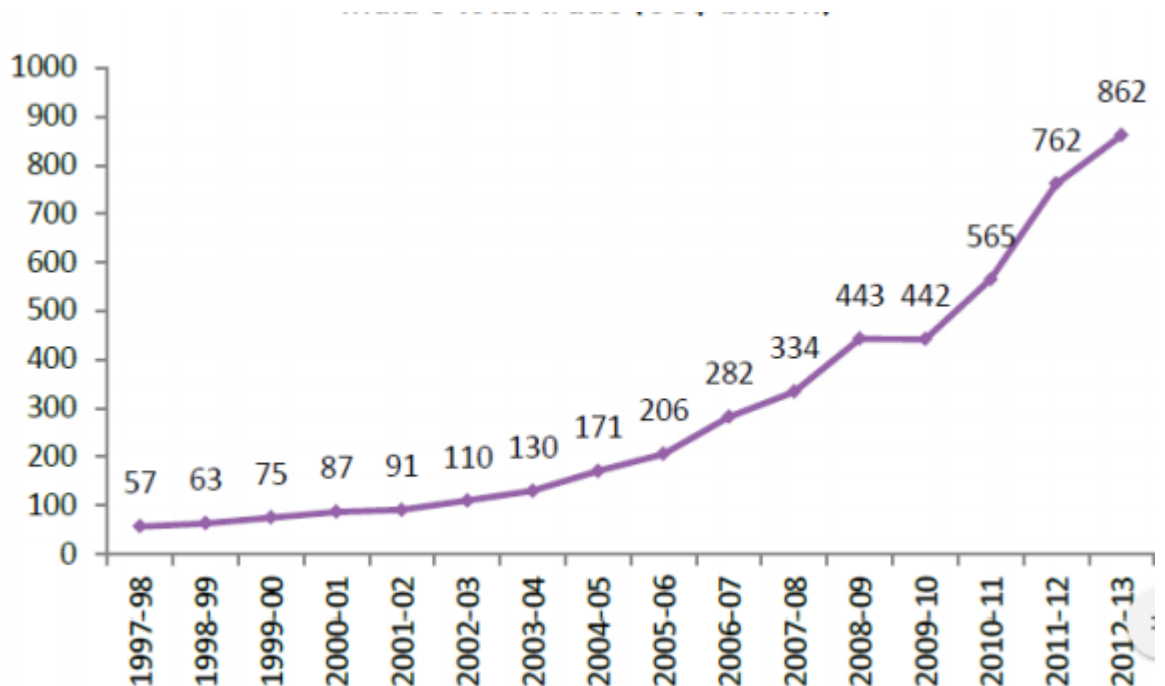
Figure 1: Economic growth of India based on logistics

(Source: Abrol*et al*. 2017)

Based on this, the extra expenses and huge costs have been managed by the pharmaceutical industry. Various changes have been brought by focusing on the logistics with the adaptation of technologies, better infrastructure, and certain facilities. As a result, the Indian pharmaceutical industry has been able to boost the customer demands and shareholder values. This also has brought data accuracy, effective management of data and distributions. Due to this, higher demands and competitiveness has been witnessed that has been impacting the Indian pharmaceutical industry. Thus, the Indian pharmaceutical market is expected to grow with the worth of around 33.18 billion by 2023. Indian pharmaceutical industry has likely been able to increase the capabilities by providing better solutions. This also enabled the environment for creating value propositions (Alyahya*et al*. 2016). Several benefits have been found like greater productivity, fewer suppliers with short planning cycles, reduced inventories, and short lead times. Based on the pharmaceutical report analysis, it is often found that India has faced challenges due to the fluctuating temperatures in environmental conditions vary from 25 to 500C at various places or location within India.

With this, chaos and higher demands have been found, henceforth, the pharmaceutical industry has started to use advanced technologies and tools like RFID (Radio-frequency identification technology) and blockchain technology for effective logistics system. These technologies and effective regulatory systems have been considered as the boon to the Indian pharmaceutical industry. This has allowed reducing the issues or failures based on management of the data, resources, stocks, supplies, and inventories. Further, real-time monitoring has been possible with this; the excess cost has been reduced. Blockchain technology is used for verifying the authenticity of the returned drugs (Badzar, 2016). It has been acquired that the use of the Internet of Things has helped to monitor the supply chain activities. This is also used to control temperature. Thus, the technology has also provided better ways to add governance or compliance within the supply chains. In Indian pharmaceutical industry, this technology helps to maintain the transparency and traceability (Bozarth and Handfield, 2019).

Furthermore, effective quality and reliability have been found in the process of ensuring quality and effective standards. On the contrary, it can be said that other issues or challenges that have been faced by the Indian pharmaceutical industry are expiration, lack of support or coordination. The Indian pharmaceutical industry has also faced issues based on the order management. There

are certain trends that have also been affecting the pharmaceutical industry. The more empowered patients have increased the process of treatment and thus Indian pharmaceutical is facing issues based on various changes based on new market scenario. It is also acquired that foreign patients also like to access Indian treatment, this is due to the less cost structure (Datta, 2018). In this process, change management is required to reduce the impacts on the Indian pharmaceutical industry (Jamwal*et al.* 2017).
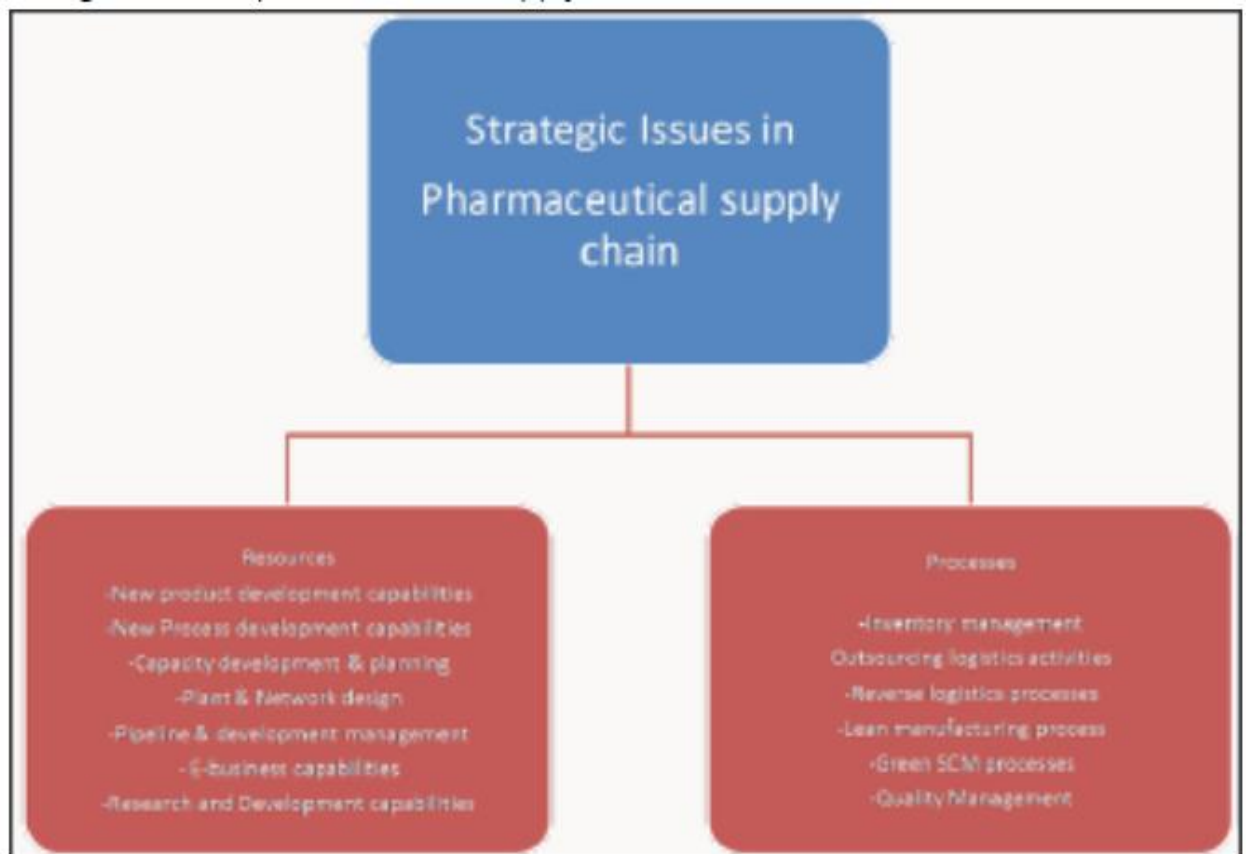
Figure 2: Indian pharmaceutical challenges

(Source: de Campos *et al.* 2017)

2.3 Challenges faced by Indian pharmaceutical industry

The pharmaceutical industry in India is growing eventually but it is facing certain challenges that need to be resolved. The challenges are following:

Lack of coordination: This is a very common challenge in the pharmaceutical industry of India associated with logistics through which a pharmaceutical company might face hardship to get medicines and their kits on time. It is a large industry that needs constant support and it is needed

to have a flexible supply chain with correct coordination. The manufacturers cannot provide counterfeit drugs to the people if there is lack of supply. People always need medical drugs for their health issues and if the logistics organisations cannot deliver those on times, then they might use cheaper counterfeit drugs in many cases. It can harm the patients and also reduce the band value and the organisations can face legal issues (Viloria, 2016).

Inventory management: In the pharmaceutical industry, inventory management is a complex procedure that involves interrelated subsystems. The changes in a certain part can impact the other parts as well. In current time, several inventions support the growth of inventory management of the pharmaceutical industry in India. However, a small mistake might develop enhance turnaround time, confusion, and expenditure. Along with this, new demands are created in the industry and to deal with it, changes in inventory management system making it more complex.

Order management: The information about demand and products associated with various levels of the supply chain are used for decision making procedures for order management. However, in many cases, there is a lack of accurate information available and for this reason, the order management needs to be based on experiences and assumptions. In this procedure, the orders arrived are inaccurate and incomplete and sometimes they can be delayed. This imposes a negative effect on the availability of the correct products along with the inventory management in the pharmaceutical industry. It develops a negative effect on public health and legal issues can be developed (Abbas and Farooquie, 2018).

Temperature control: The environmental conditions such as temperature can highly affect the drug potency in the pharmaceutical industry. In this context, if the suppliers or retailers fail to keep the drugs in the correct temperature, then there might be a high amount of product wastage. The refrigerated storage rooms or containers are available in the warehouse where the pharmaceutical products are stored. However, there are gaps in order to store different drugs and adjust the temperature in different scenarios in order to protect the drugs.

Shipment visibility: It can be difficult for the manufacturer, stockist, or retailers to identify the status of shipment which the manufacturer ships the orders for delivery. There is no correct system implemented in all the levels of the supply chain in which the delivery status can be updated. A retailer or stockist can place orders to different manufacturers for different types of pharmaceutical products and for this reason; it is not possible to use the same system by all. In this procedure, the

correct date for arrival of products cannot be measured that creates operational problems (Abrol*et al.* 2017).

2.4 Importance of effective Indian pharmaceutical logistics industry

Based on the identified issues, it can be stated that Indian pharmaceutical industry requires effective strategies and regulatory systems to bring integration. The era of globalisation, innovation and integration restricts the aspect the believing the zero-sum game. However, the Indian pharmaceutical companies work under extreme pressures due to increasing the customer demands and expectations and higher product or service variety. The better logistic system within the Indian pharmaceutical industry will help to win the customer delight and bring satisfaction (Dubey*et al*. 2017). Thus, it can be analysed that logistics is the most effective part of a company or a firm. In this context, pharmaceutical companies and industry gets long term success by ensuring sustained growth and sustainable development (Abbas and Farooquie, 2020). In this regard, the decision-making model will be proved effective in the context of supplier selection. This deploys a tremendous amount of operational and financial resources of the pharmaceutical industry. This helps the managers to bring effective decision by the involvement of effective supplier selection strategies.

In this aspect, certain examples can be provided to support the facts and ideas. For example, SUN pharmacy shows the success based on acquisition strategy related to Ranbaxy (Manikandan and Sundarakani, 2019).
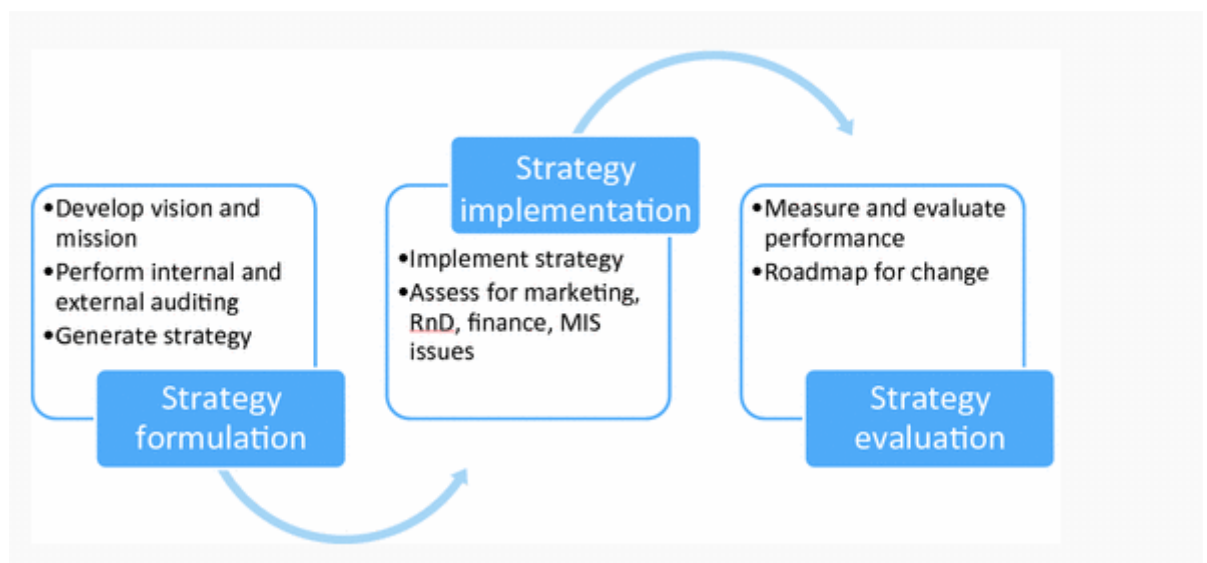
Figure 3: Strategy implementation

(Source: Dyaran, 2018)

Based on the Indian pharmaceutical industry, the pull strategy can ensure just in time delivery, which requires distribution capital investments or 3PL outsourcing (Manikandan and Sundarakani, 2019).

2.4.1 Globalisation of Indian pharmaceutical industry

Indian pharmaceutical has focused on innovation by learning FDI (Foreign direct investments), in house R&D, technology acquisitions and R&D directions. Indian drug innovative initiatives have been considered effective for new product or infrastructure developments. Indian pharmaceutical firms have started doing R&D investments to reduce the constraints that the industry has been facing in the recent competitive market (Ho and Chuah, 2018). R&D strategy has been developed based on global trends; this has enhanced the process of coordination and collaboration. Another major factor that is related to effective integration is the good manufacturing practices or approaches of Indian pharmaceutical industry (Genovese *et al.* 2017).

Further, the concept of TQM (Total quality management), SCM (Supply chain management) have a direct impact on the operational performance of the Indian pharmaceutical industry (Kiran, 2016). TQM helps to bring smooth supply chain management processes. This focuses on the process of continuous improvements by identifying the issues or challenges that the Indian pharmaceutical industry has been facing (Sharma and Modgil, 2019). This focuses on supplier partnership, information sharing, inventory controls and procurement management (Li, 2019). Furthermore, the modernisation and innovativeness has helped to implement green supply chain management practices for restoring the competitiveness (Kurian, 2018). Indian pharmaceutical company has applied various strategies that have a positive impact on the logistics of the industry (Hugos, 2018).

2.5 Various strategies for improving Indian pharmaceutical industry

The regulatory system of India has proposed an effective pharmaceutical or medical regulatory system. The Central Drug Standards and Control organisation (CDSCO) ensured the quality and safety of the drugs. National Pricing authority also works for an effective price setting.
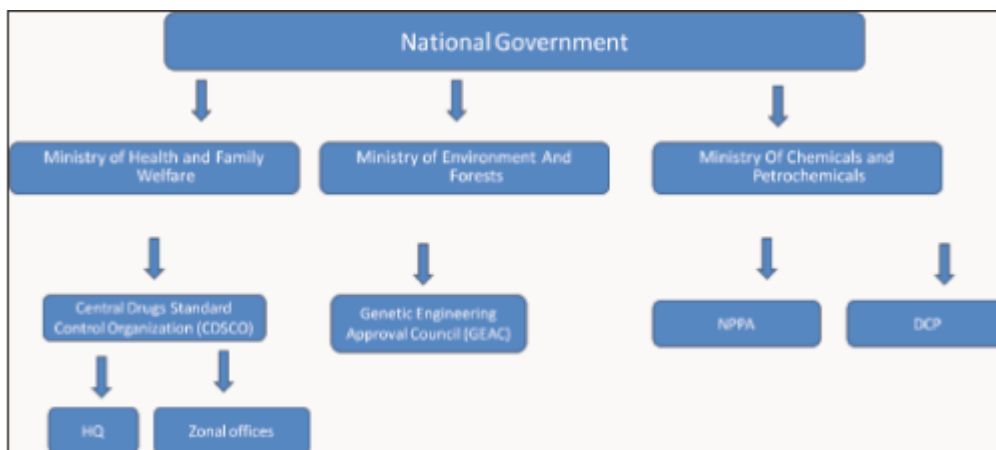
Figure 4: Regulatory system of Indian pharmaceutical industry

(Source: Zhong *et al.* 2016)

Further, it has been often seen that India has faced challenges and problems related to the temperature controls. The lack of effective storage or temperature control systems has created inefficacy. The drugs required cold storage and better transportation facilities, which is considered expensive sometimes for the Indian Pharmaceutical industry. In this process, RFID technologies have been used. This generally consists of four items like tags, encoders, host computer and readers. Thus, the tags are automatically manufactured by the microchips; the size is approximately around 0.2mm. Furthermore, the information is written onto the tags with the help of the encoder printer. This is consequently read by the readers which converts electromagnetic wave patterns that come from tags into transmits and digital signals. This way the data is stored in the tag chips in the form of an electronic product code (EPC) (Moatari-Kazerouni and Bendavid, 2017).

Regarding this, three prolonged approach can be proved effective like availability, actions, and awareness. The major focus is to create a flexible drug supply chain by responding fast to the issues of counterfeiters.
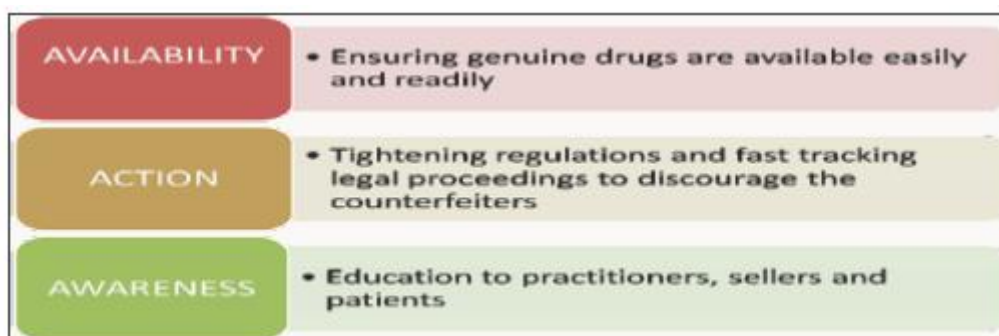
Figure 5: Three prolonged approaches

(Source: Pang *et al*. 2019)

Thus, technologies have been deployed to bring improvements like tackling the processes which involve tracking or tracing, detections, online trading, packaging. Furthermore, SOP (Standard operating procedure) for supplier quality will provide scopes to bring quality.
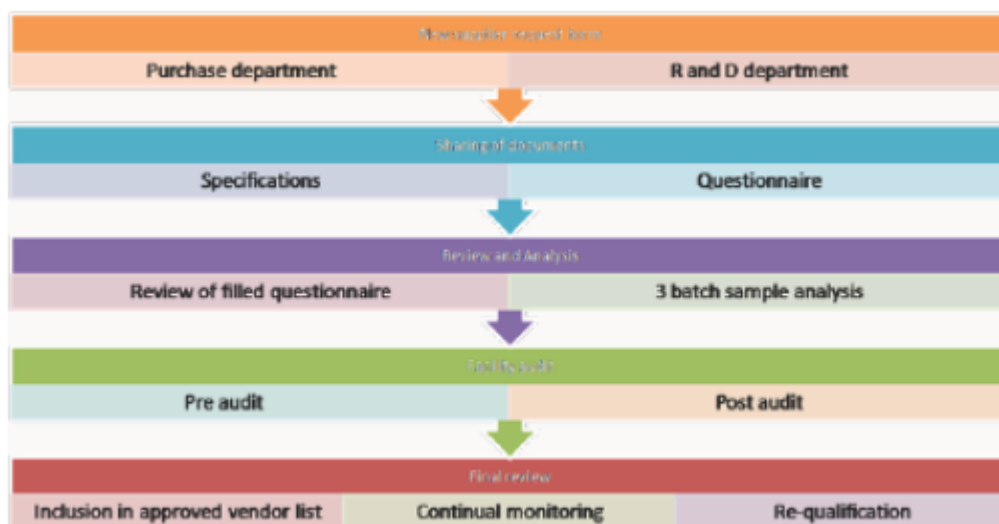
Figure 6: Standard operating procedure

(Source: Ramachandran, 2015)

Similarly, blockchain has transformed the pharmaceutical industry of India. This has helped to manage the supplies, logistics and inventory of the pharmaceutical industry (Tijan*et al*. 2019). The decentralised networks used in blockchain helps in the effective transportation of the medicines or drugs. This brings better security by creating privacy and transparency in the process of delivering services or goods in the pharmaceutical industry (Saberi*et al.* 2019). It ensures that effective transportation can be done by managing the damages, or excess costing of the services or products. In recent times, the use of logistics 3PL has helped to generate or automate the instructions based on routing, shipments, billing and providing better descriptions based on pharmaceutical products or services. Blockchain helps to route instructions by keeping a track on the product delivery or orders. Packaging bar codes are used; further, pick date and other specifications are managed by blockchain technology for the Indian Pharmaceutical industry. Further, this can be said in this context that Indian pharmaceutical industry of India has been impacted by the challenges in logistic management (Viloria, 2016). On the contrary, the issues have helped to propose effective actions,

and this has transformed the process of managing stocks or supplies. Besides, it can be also said that there are some firms that face issues based on lack of knowledge, better facilities, storage processes. Thus, it can be suggested that Indian pharmaceutical industry needs to focus on the temperature control systems that can help to reduce the loss or failures based on the stock management or storage systems of drugs or medicines. Further, based on the strategies, some opportunities can be identified that can bring better improvements.

2.6 Trends and opportunities based on Indian pharmaceutical industry

Besides, Indian Pharmaceutical industry has refined its strategy to reorient the business for embracing the challenges. With time, it has been able to apply better strategies for managing the constraints or challenges they have been facing for a long time. It is believed that better capabilities and favourable market conditions have ensured India to be considered as one of the most lucrative markets in the world. The effective strategy implementation has helped to witness an annual growth of 6-7% over the last 5 years. This has created opportunities for the future years. The stable growth in domestic market consumption has enabled rapid growth in the last few decades. With the required or proposed changes in recent times like the involvement of R&D and better logistics management has enabled it to see FDA approved facilities by lowering the manufacturing cost and production cost.

In this aspect, various opportunities can be identified that has changed the Indian pharmaceutical industry. However, Indian pharmaceutical manufacturers can propose better manufacturing efficiencies by maintaining cost excellence initiatives.
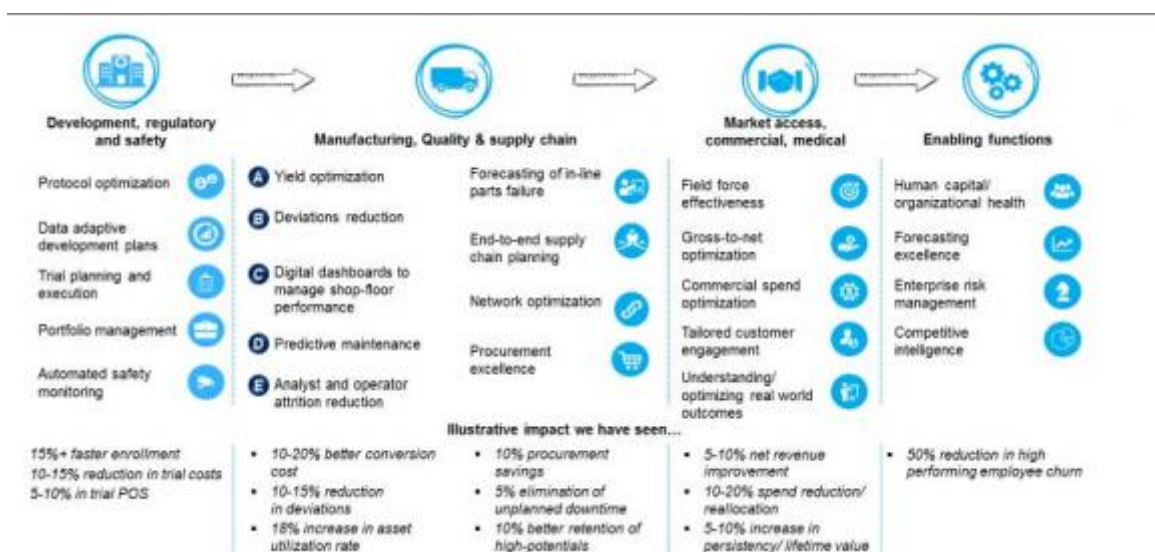
Figure 7: Logistics management

Further, the involvement of digital or advanced analytics has helped to accelerate growth in Indian pharmaceutical industry by managing resources, stocks, and supplies. In this process, linking talent to value will be proved effective. This will help to ensure collaboration by strengthening the cross-functional interfaces. Apart from this, Pharmacists play an effective role in managing the logistics to avoid discrepancies, failures or loss related to the pharmaceutical industry of India. However, India has maintained its strong position by maximising the quality of services and products.

There are certain impacts of the implemented strategies within the pharmaceutical industry of India. Thus, India can improve the reliability of the supplies by attaining full compliances. Thus, the operational excellence will also be developed.
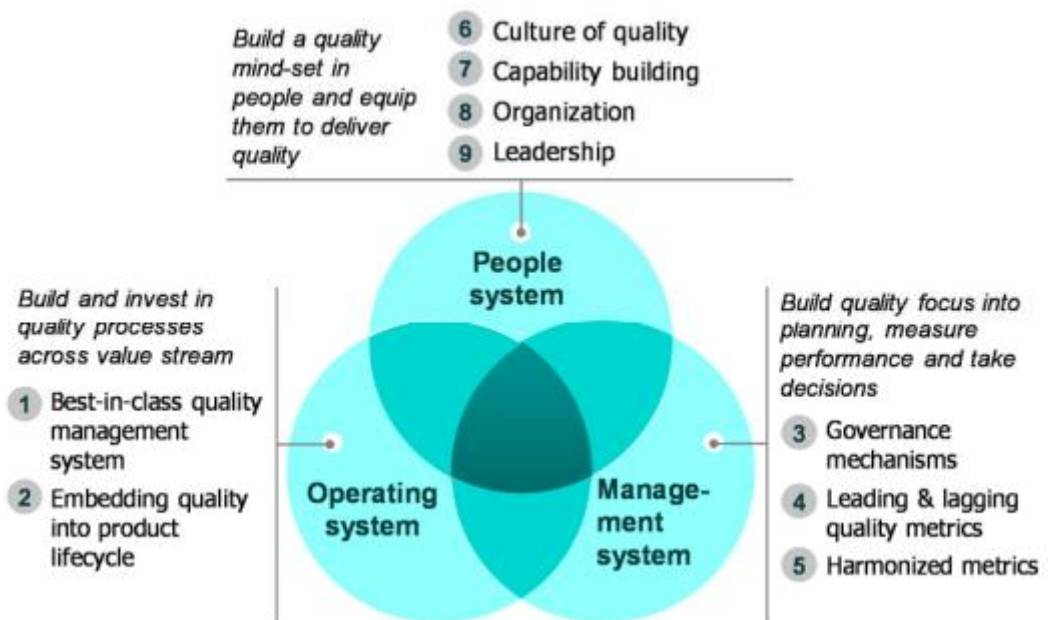
Figure 8: Operational excellence

Indian pharmaceutical industry has included better intervention, which has brought strong quality by upskilling the quality talent pool of the staff or operational management team. Training, building culture has changed the atmosphere and this has enhanced the performance. This will enable the individuals to work with collaboration, openness, and ownership. The pharmaceutical companies' ac focus on the QMS (Quality management system), this will help to manage the performances for bringing innovation and creation at work. Besides, the lean management or applications has driven the efficiencies by managing costs and equipment's.

In the present years, India is at a very interesting stage. However, still there are several challenges in Indian pharmaceutical industry. It has been witnessed that the pharmacy industry of India will get better results if it focuses on the outputs more rather than the inputs. Thus, it can be stated that effective management of raw materials or procurement management will help to bring effective results. Based on the strategic implementation, it can be very clearly identified that India has brought proposed development in the process of logistics management. In addition, in the future years, it can give a tough competition to the global countries. The Indian pharmaceutical industry must involve better ERP solutions. The involvement of artificial intelligence has ensured effective excellence and distribution chains. There are certain components related to the pharmaceutical industry. This involves granulation, coating, packaging, compression, and granulation.

Apart from this, certain policies and approaches are required to reduce the issues of logistics. Hiring the right people has been proved effective as it helps to avoid the human errors that can create major losses or failures to the pharmaceutical industries. Effective leadership style is required to bring informed decisions. Better commitment is required to understand the job roles, responsibilities, and duties of individuals. This reduces the issue of conflicts or mismanagement that is created through miscommunication, doubts, confusions, and gaps.

On the contrary, based on the betterment of the environment, the Indian pharmaceutical industry must focus on the sustainable resource management. This will enhance the creation by creating value and involvement of CSR (Corporate Social Responsibility) approaches. The pharmaceutical industry must always work in partnership with the government. This brings standard in the process of bringing positive results by managing the services, supplies or resources in an effective way. The implementation of the advanced technologies will help the Indian pharmaceutical industry to maintain the privacy and security of the Personal or confidential data. RFID also brings inventory visibility by reducing shipping errors while transporting the drugs or medicines. Virtual decentralisation helps to improve the cooperation by managing procurements and inventories (Zhong*et al.* 2016).

Figure 9: Innovative approach

(Source: Sainathan and Groenevelt, 2019)

The innovative approach helps to solve various problems like budget shortages by focusing on time management. Similarly, supply utilisation management plays a crucial role in the implementation of Vendor managed inventory in logistics. In this regard, it has been witnessed that Indian Pharmaceutical industry has been using mainly two models, which include the forecasting model and the replenishment model (Sainathan and Groenevelt, 2019). However, sometimes the replenishment model creates disadvantages to keep a track on the inventories and sales of frequent supplies related to the pharmaceutical industry of India. In this, context, the forecast model will best suit for Indian pharmaceutical industry.
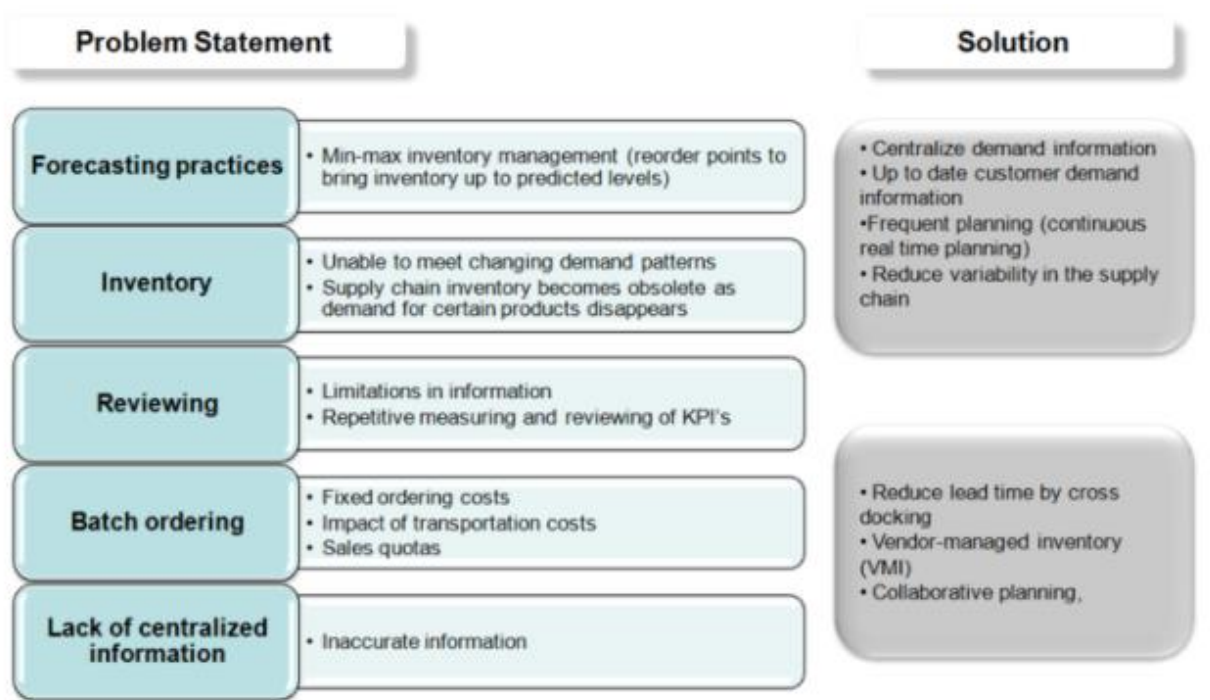
Figure 10: Forecasting model

(Source: Sainathan and Groenevelt, 2019)

2.7 Future perspectives of logistics in Indian pharmaceutical industry

In the current scenario, the global pharmaceutical market is associated with high discontinuity in which the growth rate of developed markets is slowed down and in which development of emerging markets are necessary. The pharmaceutical market of India has immense opportunity to grow along with the markets of Russia, China, and Brazil. The characteristics of Indian pharmaceutical market make it unique in which 70 to 80 per cent of the market is dominated by branded generics. The local farms also enhance growth through having investments and effective development capabilities. The price of the products is low to deal with high competition in the market (Guerin *et al.* 2020).

In Indian pharmaceutical industry, many new players are also emerging with quality products and knowledge. In the past five years, there are some new entrants with the top ten lists in India. This is increasing competitiveness in the market and the large businesses are focusing on greater quality and affordable pricing. Along with this, the rising income of the people and effective medical infrastructure is also helpful for Indian pharmaceutical industry to grow. More number of people in India can afford the medical products while necessary. There are more government hospitals

that support people to get treatment with no or minimal price possible and those are one of the largest purchasers of medical equipment and medicines.

Along with this, India has a number of pharmaceutical companies that export various medical drugs, medicines and vaccines throughout the world with affordable prices. The foreign policy of India plays a greater role in this context through which India takes part to supply various medical equipment's to different countries. At the time of Corona Pandemic, Indian government supplied a high amount of hydroxychloroquine to the USA and many other countries. It helps India to get privilege to secure its pharmaceutical products in those countries in future and a greater number of companies can expand their business in those countries. Serum Institute of India is also participating in developing vaccines for Covd-19 with partnership with Oxford University and others. It has capability to mass production of vaccines in order to meet the needs of India along with different countries in the world (Gumber and Bulsari, 2020).

Therefore, in the coming future, India can reduce dependency on China to get supplies for developing medicines. It can also capture the market in different countries fast through developing effective supply chain and logistics management prelude. The investment from Indian government can be increased to support the growth of the industry and many new pharmaceutical businesses along with suppliers and logistics companies can be developed in the country. It helps to reduce the price of the medicine and other medical tools that will be helpful for the more number of people to afford those while necessary and the government can deliver medical facilities to more number of people in India.

2.8 Gaps in the literature review

Certain gaps have been found while reviewing literature; this has created confusion to come a conclusion. The differences in the point of view of the different scholars have created confusion and doubts. This has provided a lack of complete knowledge based on various concepts related to logistics regarding the Indian pharmaceutical industry. The gaps in the year have created a lack of deeper insights that have impacted the flow of ideas by creating restrictions to propose effective solutions. The lack of continuity has restricted to maintain the flow in the perception of the scholars in the context of the past studies. Abbas and Farooquie (2020) have commented that Indian pharmaceutical industry has faced immense challenges in logistics due to lack of effective coordination, policies and implementation. On the other hand, Alyahya*et al.* (2016) has commented that the government has taken certain initiatives that have improved the services and quality of the supply chain or inventory management of the Indian pharmaceutical industry.

Dubey*et al*. (2017) has commented that even after the implementation of the effective strategies within the Indian pharmaceutical industry, there are certain firms that have been facing problems including advanced technologies; this is due to the lack of knowledge and technical skills. Based on this, de Campos *et al.* (2017) has opined that training and talent management is required to reduce the gaps so that effective productivity and better performances can be acquired. Similarly, Sainathan and Groenevelt (2019) commented that value creation requires innovation. The relationship management will help to work in partnership by bridging the gaps between individuals. On the other hand, effective regulatory systems and policies will help to bring standards in the process of stock management. The application of green supply chain management will create better results by managing the supplies or inventories of the Indian pharmaceutical industry.

2.9 Summary

This section has analysed various concepts and facts regarding the logistics of Indian pharmaceutical industry. Furthermore, various challenges and issues have been identified that has been restricting the Indian pharmaceutical industry to get positive results. Based on this, certain initiatives have been taken to reduce the constraints regarding order management, inventory controls, storage systems and temperature controls. Besides, the strategies have been highlighted that have helped to transform the logistics of Indian pharmaceutical industry. It has been acquired that various technologies have been proved effective for managing the supplies, inventories and stocks of the Pharmaceutical industry. Block chain technology has proposed effective scopes to bring automation in the process of tracking and monitoring the activities and cost structures. On the other hand, RFID has maintained proper security, privacy and confidentiality by bringing positive culture to work upon.

Chapter 3: Research methodology

3.1 Introduction

The third chapter of research focuses on research methodology. It is a specific procedure of conducting research, for the proper information analysis on a topic. Within the context of research, research methodology allows the researcher with a critical evaluation of overall validity and reliability of research. For the proper initiation of a research methodology chapter, it is important or the researcher to be able to identify the specific methodological tools that need to be considered. In addition to this, research methodology is considered the theoretical analysis of the specific methods that are applied to the significant field of study. The methodology further helps in offering a theoretical underpinning of a set of methods that are to be applied in the research study. In the context of this research, methodological research will focus on the identification of logistics challenges in the Indian Pharmaceutical industry. With the help of these methods and paradigms, it will be easy for the researcher to propagate the appropriate method that would help in contributing to the research outcome effectively.

3.2 Research philosophy

The notions of research philosophy are a definite belief about the definite ways with which the research is to be carried out. It tends to refer to a certain belief that helps in identifying the nature of data and its phenomenon effectively. The study of research philosophy is effective in the enhancement of the problem-solving methods that need to be acquired for the development of proper research skills effectively. On the other hand, the presence of research philosophy helps in the development of the philosophies that need to be described (Johnson *et al.* 2019).
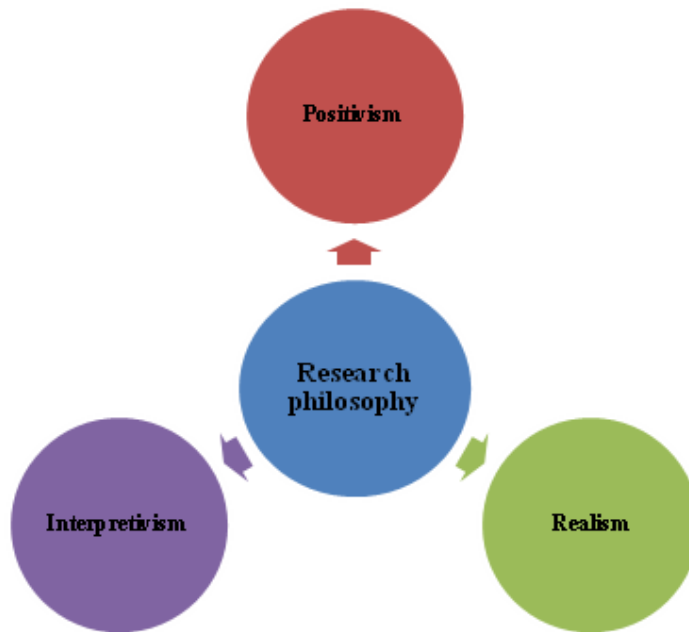
Figure 11: Research philosophy

(Source: self-developed)

Research philosophy can be divided into positivism, interpretivism and realism. Positivism research addresses the presence of factual knowledge available to the research topic. Furthermore, interpretivism philosophy helps in the proper interpretation of the elements of the research that helps in accessing reality. Lastly, realism focuses on the independence of realist approaches in research. Hence, to understand the challenges of the Indian pharmaceutical industry, interpretivism research philosophy has been selected (Nguyen *et al.* 2020).

3.2.1 Justification

The association of the social constructs present in the research essentially guides the existing challenges of the Indian pharmaceutical industry. With the help of interpretivism research, the researcher will be able to integrate human interests and the other perspectives into this study. The proper interpretation of data will help in acquiring knowledge about the emphasis of research variables.

3.3 Research approach

The approach of research is entitled to be the procedure that comprises steps and methods. It helps in the assessment of the detailed methods and interpretation that is based on the nature of the research problem that has been addressed. The research approach methods help a researcher to be able to gain a solution to the potential research problem that has been initiated. The relevance of

proper research hypothesis development helps in understanding the techniques that are required for the research assessment (Ghauri*et al.* 2020).
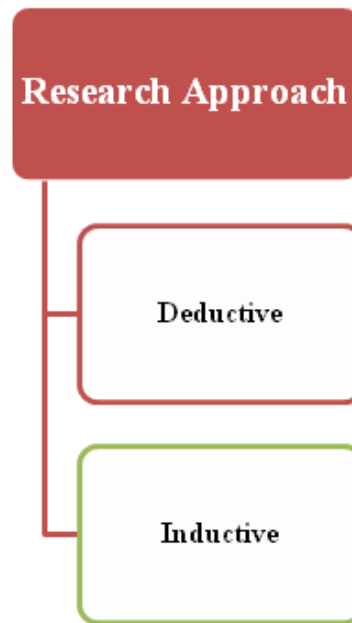
Figure 12: Research approach

(Source: self-developed)

Research approach can be divided into inductive and deductive research approach. Deductive research approaches tend to test the validity of the research assumptions that have been identified. In addition to this, an inductive research approach contributes to the potential emergence of theoretical perspectives that help in the explanation of the research premises that need to be identified. In the context of this research, a deductive research approach has been selected.

3.3.1 Justification

The presence of deductive research approach helps in the facilitation of identifying the potential hypothetical development. It helps in identifying the definite ways with the help of which the research can be identified. To understand the definite challenges of logistics, the use of deductive research approach helps in assessing the effects of such challenges in the Indian pharmaceutical industry.

3.4 Research design

The notion of research design essentially refers to the overall strategy that allows researchers to choose the integration of the different components of the research study. It helps in effectively addressing the research prevalent and eventually constitutes the blueprint of the measurement and

analysis of data. It is to be noted that research design helps the researcher in analysing the data that helps in identifying the definite ways in which data is to be collected (Blaikie and Priest, 2019).
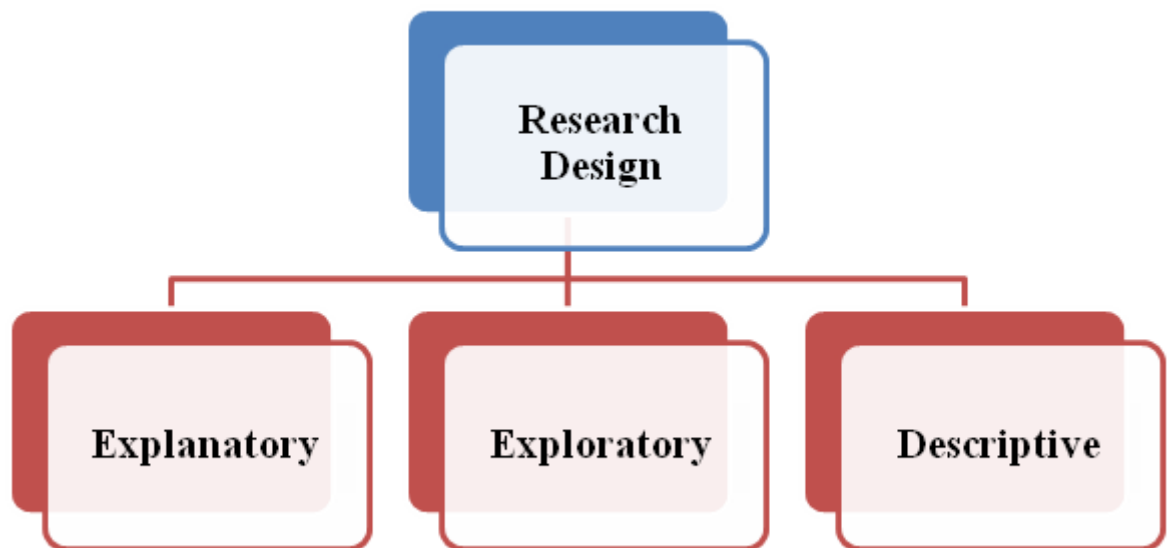
Figure 13: Research design

(Source: self-developed)

Research design can be divided into exploratory, explanatory, and descriptive research design. Exploratory research design is conducted for the identification of a definite research problem with the help of data that is to be acquired by the researcher. On the other hand, explanatory research design helps in generating significant operational definitions, which help in the provision of a better researcher model. It focuses on the creation of the aspects of a research study in a detailed manner. Descriptive research design helps in describing the characteristics of a sample population or phenomenon that needs to be studied, I help in understanding the subject matter of the research study effectively. For this research, descriptive research design has been selected.

3.4.1 Justification

With the use of descriptive research design, it helps in the accurate presentation of describing a definite research phenomenon. In order to understand the potential problems of logistics in the Indian pharmaceutical industry, it would help in the facilitation and investigation of proper research variables in an effective manner.

3.5 Research strategy

The aspects of the research strategy are a proper plan, which helps a researcher to gain insight into the methodological tools that need to be assessed. It enables the researcher to be able to conduct research in a supposedly systematic manner. The facilitation of equality results helps the researcher to understand the definite aspects of research that is to be carried out. Based on the research variables identified, the research will be carried out with the conduction of the interview. With the help of conducting an interactive interview with the research participants, the researcher will be able to understand the views and opinions of individuals regarding the research problem that has been identified. On the other hand, the research strategy will further help in finding the scholarly provision of the research field, which helps in the facilitation of hypothesis development.

3.6 Data collection methods

Collection of data is perhaps a significant element in conducting research effectively. It is referred to as the gathering and measuring significant information that enables the researcher to answer their stated research questions that have been identified. It is to be noted that methods of collecting data help in the evaluation of potential research outcomes that helps in understanding the research propositions that need to be carried out. Data collection has two classifications, namely, the primary collection of data and the secondary collection of data (Santini*et al.* 2019).

The primary data collection method is essentially based on the association of first-hand sources. It includes the incorporation of surveys and experiments along with the initiation of interviews. On the other hand, individuals other than the researcher collect the notions of secondary collection of data. It comprises second-hand sources which are already present. It includes the implementation of scholarly articles based on the area of research. Hence, in the context of this research, secondary collection of data has been selected. The initiation of the interview will help the researcher to gain perceptions of individuals regarding the potential challenges of logistics in the Indian pharmaceutical industry (Edward and Leo-paul, 2019).

3.7 Data analysis techniques

Analysis of data is a method, which helps in collecting as well as organising the driving helpful information. The major aim and objective of data analysis is to be able to understand and interpret data that has been collected. It tends to involve the observation of research perspectives that have been carried out. The analysis of data processes can be divided into the quantitative analysis and qualitative analysis of data. Qualitative data analysis is characterised by a range of processes and procedures based on which the data that is collected is to be analysed. On the other hand,

quantitative data analysis technique is associated with the inclusion of the calculation of frequencies of research variables that are present in the identification of supporting research problems (Sillitti *et al.* 2019).

In the context of this research, qualitative data analysis has been selected. The use of analysis of qualitative data will be done in the form of an interview. This interview will be conducted to understand their perceptions regarding the lack of logistics effectiveness that is present in the Indian pharmaceutical industry. Hence, from this point of view, it can be asserted that the process of analysing data helps in the association of analytical and logical reasoning (Kim and Wang, 2019).

3.8 Sample size

The determination of sample size essentially refers to the initiation of choosing specific observations. It tends to include the presentation of the sample. The determination of sample size is an important feature that helps in identifying the definite aspects of the research process that needs to be assessed. To understand the definite logistics problems of the Indian pharmaceutical industry, the sample size for initiating the interviews is 5. The respondents selected are the supply chain managers of reputed pharmaceutical companies in India. They will be able to shed light on the definite problems and issues that they are facing currently. It would further enable the researcher to gain a positive research outcome from the views and opinions that are being stipulated by them. These members will be interviewed to gain the potential perceptions that these research participants tend to perceive.

3.9 Sampling techniques

The provision of an effective sampling process is a significant statistical analysis, which aims at the identification of the predetermined number of observations. This definite methodology is essentially used for the identification of the sample population that needs to be carried out. Sampling techniques can be further classified into probability, non-probability, and random sampling techniques. Probability sampling tends to involve the random selection of making statistical inferences regarding the whole group. The notions of non-probability sampling tend to involve the selection of sample populations that is based on the convenience of the research criteria that allow the researcher to collect the initial data. Lastly, random sampling refers to the random selection of research aspects that help in proper research propositions. To carry out this research, random sampling has been selected. It would enable the researcher to be able to understand the sample population (Hmida *et al.* 2019).

3.10 Ethical considerations

The ethical considerations in research can be specified as a significant element for conducting research properly. It tends to embody a definite code of conduct, which needs to be assessed that a researcher needs to follow. Based on this assessment, the following ethical considerations of research can be considered:

- The research participants cannot be subjected to harm in any possible ways.
- It is important for the researcher to respect the dignity of the research participants. The prioritization of research respondents is important.
- There should be an adequate level of confidentiality that needs to be ensured effectively.
- The establishment of communication while carrying out the research needs to be done with proper transparency.
- Informed consent needs to be ensured for the participant of research. It involves the provision of sufficient information that needs to be carried out (Hancock *et al.* 2020).

3.11 Research limitations

The initiation of research embodies some potential challenges that restrict the proper assessment of research outcomes. Such limitations of research omit the possibility of gaining a proper research outcome. However, it cannot be denied that limitations are somewhat important in research. This is because it somehow helps in understanding the proper placement of research findings in the context of the research variables that have been identified. It helps in the proper interpretation of the research process that describes to a credibility level to the conclusion that is established in research (Goerres*et al.* 2019). It further goes beyond the listing of the magnitude of the random and systematic errors that creates research validity and accessibility problems. Therefore, it is important to identify the extent to which such research limitations hamper the overall foundation of research and are as follows:

- The first and foremost limitation of the research is the inability to formulate proper research aims and objectives. Improper research objectives often lead to a lack of research focus, which should have been narrowed to gain specificity.
- The implementation of the wrong data collection method is another major research limitation. The flaw in data collection diverts the area of study and the data acquired is characteristically flawed.
- Lack of previous studies within the research area is another research limitation, which creates a negative shift from the research domain. For acquiring property research

outcomes, it is important for a proper understanding of the previous areas of research associated with it.

- Unavailability of potential resources often deviates the research process from its actual position. The inability to acquire proper resources for the fulfilment of research often creates gaps in research development.
- The scope and depth of discussion in the research are often compromised in many levels of research. Due to the inappropriate corrigibility of research objectives, it often creates a shift in the research propagations that are presented in the research (Staffa *et al.* 2019).

3.12 Summary

The importance of research methodology can be located from its ardent involvement of planning and assessment of operational problems. Its significance in the association of informed decision-making that helps in studying the cause and effect of the interrelationship of the research variable that has been identified. It tends to encompass certain concepts that include the notions of paradigm along with an embodiment of research models and methodological tools that need to be used. The implementation of these paradigms and the methodological tools would enable a researcher to understand the further proceedings that the research requires. The current chapter explored the methodological underpinning that is to be carried out for the research study. Based on the research topic, the methodological tools can be considered effective in identifying challenges of logistics in the Indian pharmaceutical industry. Hence, it can be concluded that the presence of these methods and processes will further help in deriving the potential research findings and would help in identifying the variables of research. It would further help in acquiring a deeper understanding of the research subject in an effective manner.

Chapter 4: Data analysis

4.1 Introduction

The presence of qualitative data analysis essentially allows a researcher to effectively interpret the information that has been collected for the sake of conducting research. It is to be noted that the association of qualitative data analysis involves the focus on the validity of the findings that are to be derived out of the research process. It often tends to vary due to the potentially subjective nature with which the information and data are to be analysed and interpreted. In this chapter, the qualitative analysis will be done. The data collected from surveys and interviews will be analysed through summarizing and identifying the main points. The data gathered through survey and interviews shall be analysed through a brief discussion. The candidates for survey are professionals working in the relevant logistics sector of pharmaceutical industry and a small proportion of students who are doing their studies in logistics and pharmaceutical and at the same time the interview was conducted with five professionals working in Pharmaceutical industry in logistics sector in various designations whose identities are hidden for research ethics purposes. In this section of the research the analysis of primary data gathered through survey and interviews are analysed to obtain the results and findings. On a whole a total number of 100 respondents attended the survey and five professionals were interviewed to gather the primary data. The survey consists of 10 questions and 5 options are provided for each question and an option to comment for respondents in each question

4.2 Quantitative data analysis

Question 1:

Do you agree the Indian Pharmaceutical Industry has ample storage provisions in rural areas?

100 responses

- ● Strongly Agree
- ● Agree
- ● Strongly Disagree
- ● Disagree
- ● Neutral
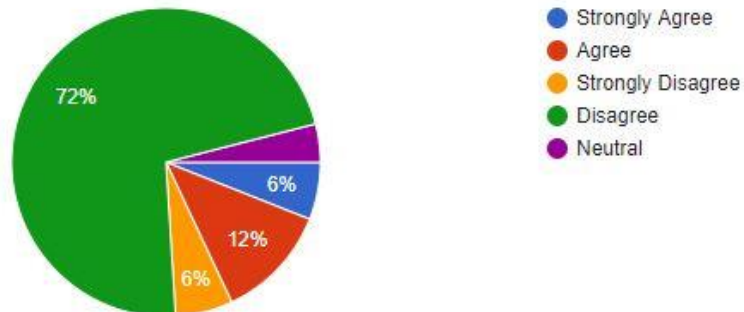
COMMENT

11 responses

In many rural areas of India the pharmaceutical companies are yet to establish their industry

Disagree

Most of Indian villages are poor and the life there is very miserable that they have to rely on cities for better medications

Most of the storage facilities avialable at city provinces

Many medicines require cold store facility. Many villages either lack the facility or are affected by electricity playing truant.

Space requirements to be studied and executed on ground.

I do think there are enough storage provisions in India

Pharma sector has not been able to penetrate rural areas due to poor health infrastructure, low affordability by rural folks. Lack of economic incentives makes it not worthwhile to invest in storage

The first question is about the storage provisions for logistics sector in Pharmaceutical industries in india in rural areas, the survey question focusses on rural areas as the urban and metropolitian cities already have enough storage provision and is well competitive compared to many other countries. The rural areas has poor infrastructure and less facilities in many sectors and here 72% of the respondents agreed with the fact that rural parts of India doesnot have ample storage facilities when it comes to Pharmaceutical industries and as a result of which the visibility of supply chain is hidden.

Question 2:

Is the Indian Pharmaceutical Industry technologically equipped in logistics service?

100 responses
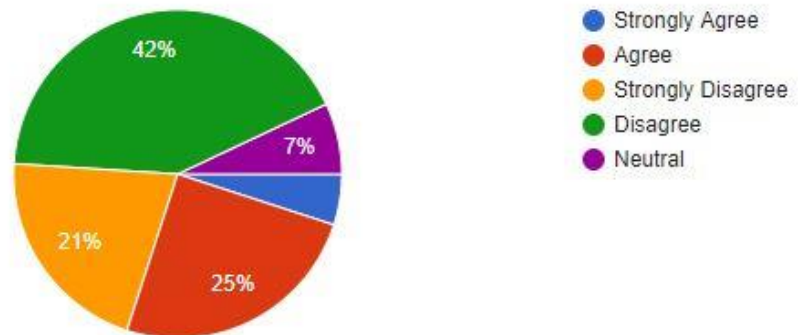
COMMENT

7 responses

Strongly disagree

Govt shall took adequate step to ensure the logistics

The industries are located in metropolitan cities or suburbs where the service is available.

Yes, if invested right with efficient people

Much investment in terms of robotic warehouse systems and better tracking with tools like RFID tags to improve visibility throughout the supply chain needs to be done.

Many logistic ships are going abroad in all over world from India

Clueless

The technological growth in any industry is at an astonishing growth in India and when it comes to the logistics sector of Pharmaceutical industry 42% of the respondents believe the sector still needs technological advancement but at the same time there is a proportion of about 25% respondents still believes India is equipped enough technologically to compete and hence it's a difficult decision to make, at the same time it is to noted that many Pharmaceutical industries are updated and equipped with Artificial and Augmented Intelligence, blockchain, warehouse logistics etc.

Do you believe the government of India is doing enough to back up the Logistics sector of the Pharmaceutical industry?

99 responses

- Strongly Agree
- Agree
- Strongly Disagree
- Disagree
- Neutral

25.3%
14.1%
12.1%
43.4%
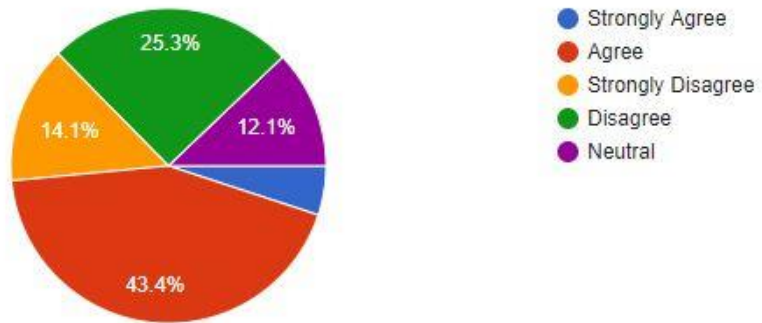
COMMENT

7 responses

Not complete but partially

Strongly disagree

Road and rail services should be liberated from beaurocratic shackles.

Am unsure as am ignorant about this information

India is a strong country for health management system

I think they're doing a great job with it

Clueless

The initiatives taken by the Government of India in promoting the logistics sector of pharmaceutical industry is discussed in question 3 and about 43% of the total respondents agree with the fact that the government is doing enough to promote the sector. Multi Model Logistics Policy is an initiative of the government of India to promote the logistics sector of India which aims at reducing the freight costs, reduce vehicular pollution and promote domestic and global trade.

Question 4:

Do you agree that the employees in the logistics sector are trained properly in the Pharmaceutical industry?

98 responses

- Strongly Agree
- Agree
- Strongly Disagree
- Disagree
- Neutral
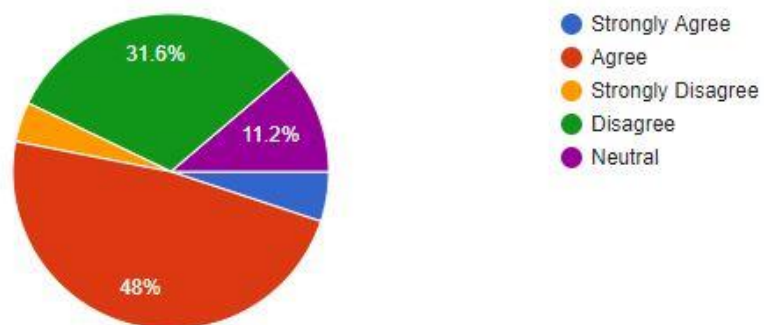
COMMENT

10 responses

Disagree
In india people face tight competition in securing good employment opportunities. And education and proper training plays an important role in securing employment. Therefore the employees in the loGistics sector in pharmaceutical industries will be trained.
Enough traning centers shall be provided and make sure the attandees
Strenuous training is provided after joining in each sector of pharmaceutical industry
Logistics as a separate subject is not strongly rooted yet.
If the certifications for these company had to be maintained, they shld be adequately trained. But the amount if Compliance to these trainings by these employees are questionable
With ever evolving technological requirements, the skillsets of the employers needs to be refined. Due to lack of support, this is lacking in India.

Logistics is said to be the next wave in business environment and hence its necessary to have well trained and skilled professionals who can mitigate the risks and efficient in problem solving and 48% of the respondents agree with the fact that the employees are properly trained in the logistics sector of Pharmaceutical industry as many of the big pharma companies have a proper strategy to hire the most skilled employees. Most of the warehouses have proper training manuals and proper material handling training for the employees at the backend of the industry and highly sophisticated technical training to the front-end employees.

Question 5:

Do you think the low visibility of the cold chain is a major challenge?

98 responses
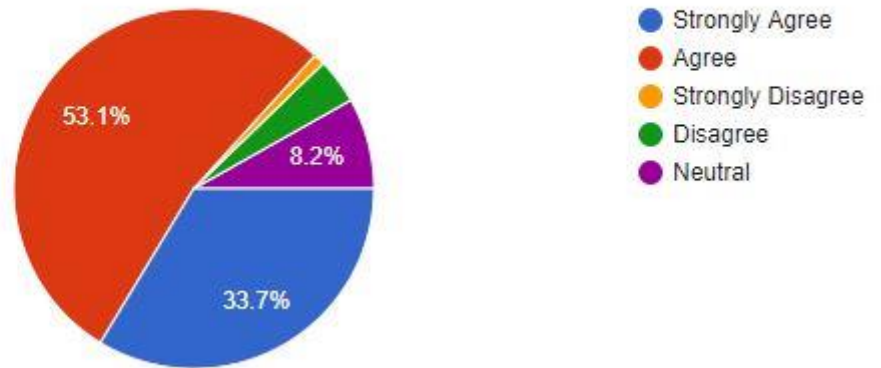
COMMENT

4 responses

| Agree |
| For reasons cited above as well as lack of awareness. |
| Depends on |
| What's cold chain? |

The low visibility of cold chain is a vital factor to be discussed when it comes to the logistics sector of the pharmaceutical industry because most of the goods are to be transported using proper temperature control systems as most of the raw materials and goods are easily perishable if the temperature is not maintained and 53% of the respondents agree with the fact that the low visibility of cold chain is a vital challenge in the logistics sector.

Question 6:

Do you agree that the lack of understanding for suppliers perspective is a key issue associated with the logistics sector in the Pharmaceutical industry?
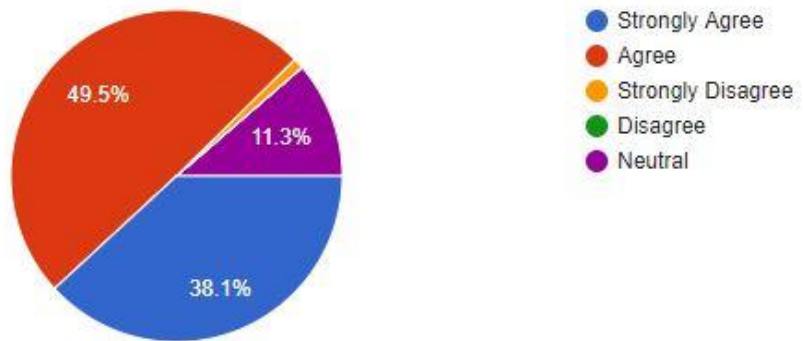
97 responses

COMMENT

6 responses

Agree

Suppliers tend to take logistics for granted.

Awareness of the process is necessary for efficiency of any given process

There is lack of effective communication between suppliers and buyers.

Medicinal drugs are used for human needs. It should not be used for illegal activities.

Clueless

87% of the respondents agree with the fact that the lack of understanding the supplier perspective as an yet another challenge that the logistics sector is facing, because there are instances where the wrong goods can be delivered due to the lack of supplier-management relationship and a major proportion of the respondents were sure that this is a critical issue in the sector.

Would the economic growth be impacted by sophisticated logistics sector in the Pharmaceutical industry

97 responses

- Strongly Agree
- Agree
- Strongly Disagree
- Disagree
- Neutral
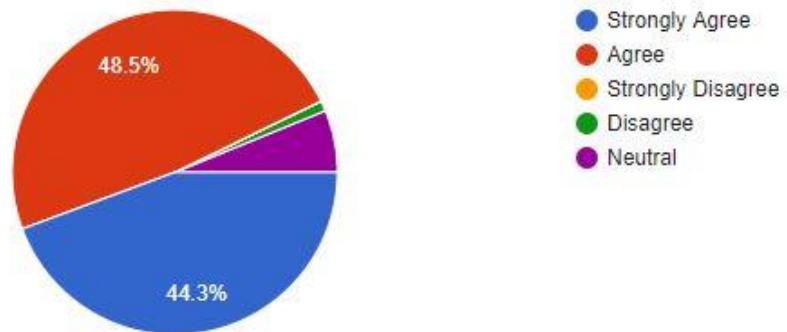
COMMENT

7 responses

Economic growth will be highly influenced if the sector is highly sophisticated

Agree

Sophisticated logistics will make the products available at the right time and will increase visibility.

I think, better and efficient pharma viability can bring more multi national companies to India and boost economic growth, but provided the government and people support the process

Strong logistics and communication sectors are regarded as the key indicators for economic growth of the company. Through sophisticated logisitcs, creation of employment, national income and foreign investment influx economy would benefit.

Humans can survive with food and waterm But nowadays some people are unable to survive without medicines when they are young and old age.

Pharmaceutical is a huge I dusty and any growth in this industry will sure I.prove the economy of any country.

Economic development in any industry is directly related to the overall development of the country and the Indian Pharmaceutical industry is said to be worth more than 40 billion us dollars and it is an ever-growing industry. More than 90% of the total respondents strongly agree that sophisticated logistics sector will bring a major economic development, it has the ability to create more employment opportunities and bring high amount of revenue.

Question 8:

Do you agree that inefficient logistics will reduce the level of organisational performance?

97 responses
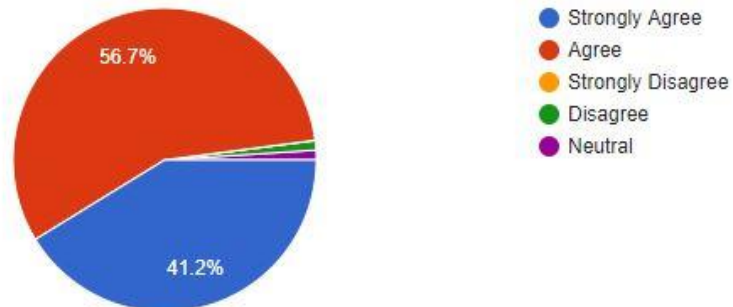
COMMENT

6 responses

Agree

Yes, its will affect the company performance due to insuffcent storage due to bad logistics

Excellent marketing efforts will not bring result if the product is not available at the right place at the right time.

The overall quality of a product is dependent on the process it undergoes

Proper management of resources and distribution of goods will allow for greater economic growths. Information management is the key

It is a necessary thing in world.

97% of the total respondents agree with the fact that inefficient logistics is directly linked with the performance of the organization, it is very evident from the response that it can contribute to the performance of an organization because it is very necessary that the pharmaceutical industry should have a well monitored and maintained logistics system that is highly sophisticated and have a skilled pool of employees.

Question 9:

Do you believe that investing in Research and Development in logistics will benefit the growth in the Pharmaceutical industry?
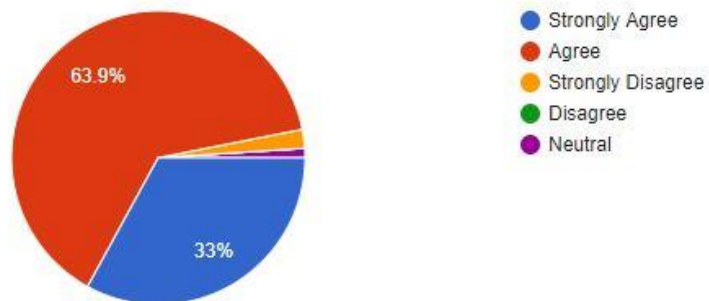
97 responses

COMMENT

5 responses

Agree

To provide better results in the fast changing scenario one will have to invest in research and update capabilities.

Better ideas through research can always bring better working practices

With better investment in the knowledge pool for logistics, many of the roads blocks can be eliminated strategically.

In my opinion no business can run smoothly without good customer support and investors.

About 99% of the respondents agree that a proper research and development is the backbone of logistics in the Pharmaceutical industry but at the same time there was a tendency in many organizations to be reluctant in investing in research and development, and currently most of the pharmaceutical organization has identified the importance of investing in R&D of logistics and started working on it.

Question 10:

Do you agree whether the Pharmaceutical industry should collaborate with major third-party logistics services to enhance its services effectively?

97 responses
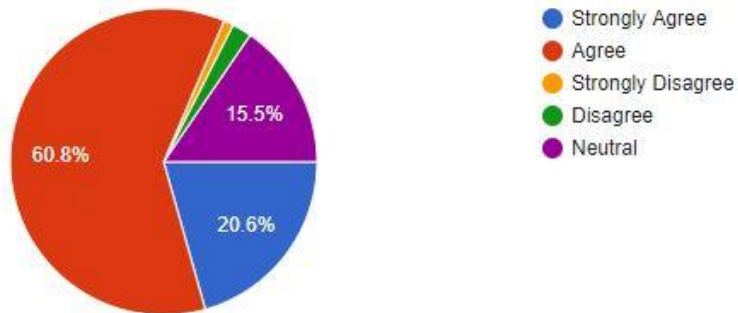
COMMENT

7 responses

Third party services will provide the system to be more systematic

Agree

Major third party logistics company shall have a good reach in rurel areas that might help to have enough stock at necessity time.

This should result in reducing cost and increasing profitability.

Provided the third party is aware and compliant to the processes involved in the process of manufacturing.

With the every increasing demand for better management, there is room for third party to be involved in meeting the needs of indian pharma industry.

May be some logistic industries are highly standard industry but we can depend on other third party industries also because they may provide some good ideas for industrial growth.

More than 80% of the respondents believe that the pharmaceutical industry should collaborate with major third party logistics service providers in order to be competent in the industry and now in India because about one-third of the revenue generated by the Pharmaceutical companies are spent on transportation alone, therefore in-order to have a cost effective management it is necessary that the organizations should rely on established third party logistics providers.

4.3 Qualitative Data Analysis

Now on the section below we will analyze and discuss the telephonic interview which was conducted as a part of primary data research with 5 professionals working in the Pharmaceutical industry in various positions in logistics sector.

Interviewee-1

1. Do you think that ineffective logistics reduces level of organisational performance?

Yes, I very much agree with that because it is really important to have a proper structure of logistics chain in order to perform the activities efficiently since in every services the customers always want the products to be delivered asap

2. How far do you think that collaborative approach between suppliers and management helps in improving logistics of a pharmaceutical company?

The lack of coordination between the supplier and management can always cause undisputed damages to the organization both financially and non-financially, Lack of coordination leads people to use cheaper medicines or medical drugs that might have side effects on health

3. How far do you think that appropriate management style enhances logistics of an organisation?

A pharma company might not receive the exact supply of goods without a proper management system. Suppose if there are issues btw the various departments inside the organization there are always chances of having mismatches in the logistics sector which will bring sales and demand forecast to have uncertainties

4. Do you agree that low visibility of cold chain is a major logistics challenge?

I believe that the first and foremost challenge of shipment visibility is low visibility of the cold chain. Without a proper cold chain, a company cannot carry out its business. If half of its medicines are not taken care of, then they are likely to incur a heavy loss and lack of quality orientation and training is associated with the lack of cold chain provision, which impacts the operations of pharmaceuticals to a great extent in India.

5. Do you think that lack of understanding for suppliers' perspectives is a key issue   associated with logistics and supply chain management?

In this industry, I believe that understanding the supplier's perspective and its selection is the most important. If I as a pharma business owner do not understand my needs and requirements in business, then I will not be able to provide enough knowledge to my suppliers. However, I think this lack of understanding creates a gap in supply chain management and logistics to a greater extent. Hence, I think it is important to ensure proper expectation levels.

6. What are your views on the factors related to logistics that help in improving the business operation of the pharmaceutical industry of India?

I think the first and foremost factor that is responsible for the improvement of logistic operation in this industry is outsourcing. Most of the companies have managed to look forward to outsourcing. The research and development processes in the emerging markets and low-cost centers have managed to carry out the outsourcing processes effectively

Interviewee-2

1. Do you think that ineffective logistics reduces level of organisational performance?

Having effective logistics is useful to shape the operational procedures and strategies of the pharmaceutical business, there has been many instances where the goods were delivered late and has caused financial loss as well as reputational loss as the top management doesn't consider logistics in mainstream

2. How far do you think that collaborative approach between suppliers and management helps in improving logistics of a pharmaceutical company?

Collaborative approaches always brings better results not only in logistics but in every sector of the department there are cases when Sometimes a pharmaceutical company cannot get what it orders from the supplier which occurs due to the miscommunication or errors in collaborative approach.

3. How far do you think that appropriate management style enhances logistics of an organisation?

In any case, the organisation needs to implement effective management procedure through which its employees can work efficiently and handle its logistics with proper planning. Personally, I believe logistic sector should be given critical importance in management framework with proper training, providing skillsets etc

4. Do you agree that low visibility of cold chain is a major logistics challenge?

I believe lack of cold chain facility impacts the temperature-controlled containers that carry the medicines. It hampers their working processes and maximises the risk of damage due to the presence of high ambient temperature, therefore, to stay competitive in the market the management should relay on the quickest modes of transportation

5. Do you think that lack of understanding for suppliers' perspectives is a key issue   associated with logistics and supply chain management?

I do not believe that lack of understanding for supplier perspective is indeed a major problem in the proper facilitation of logistics and supply chain management. I think that if there is improper communication between the supplier and the management authority, it often creates a diversion in the logistics services in the pharmaceutical industry. The carrying out of the amount of medicine and its allotment needs to be communicated to a great extent.

Q6. What are your views on the factors related to logistics that help in improving the business operation of the pharmaceutical industry of India?

I believe the presence of a proper business process management (BPM) is considered effective in helping the pharmaceutical companies in gaining efficiency. I think it helps in gaining efficacy with the help of a combination of processes that helps in the improvement of technology automation.

Interviewee-3

1. Do you think that ineffective logistics reduces level of organisational performance?

What I strongly believe is an effective logistic system is the backbone of any industry and in an industry like pharmaceutical where delivery of goods on time nothing less than a comprise. So, having an effective logistics sector will mitigate all operational issues

2. How far do you think that collaborative approach between suppliers and management helps in improving logistics of a pharmaceutical company?

Collaborative approaches between suppliers and the management eases the risk associated in industry as it makes the processes to be transparent, discuss the existing issues in one frame of system and making collective decisions so that both can make decisions on a neutral ground which is beneficial to both management and suppliers.

3. How far do you think that appropriate management style enhances logistics of an organisation?

The management should properly be aligned with the logistics of an organisation because ineffective management can create issues regarding inventory management that can lead to get wrong products. This issue usually arises when the organization depends on third party services for transfer of goods as the visibility of the logistic chain might be hidden at some stages of the service, therefore its vital to have a steady and systematic management that properly monitor the logistic service

4. Do you agree that low visibility of cold chain is a major logistics challenge?

Lack of quality orientation and training is associated with the lack of cold chain provision, which impacts the operations of pharmaceuticals to a great extent in India. Since the pharmaceutical goods are subjected to damage easily and become non useable if they are not carried properly in a cold chain it is the lack of awareness about the goods which cause this issue. So, it's necessary that the employees should be properly trained

5. Do you think that lack of understanding for suppliers' perspectives is a key issue   associated with logistics and supply chain management?

I think a supplier relationship is important as it helps in the understanding of a long-term relationship between the company and its suppliers. It allows the companies to allow a free flow of feedback and ideas. If a company fails to understand the perspectives of suppliers, it might be difficult for them to develop their pharmacy business.

6. What are your views on the factors related to logistics that help in improving the business operation of the pharmaceutical industry of India?

According to me, I feel that lean process improvement is one of the basic factors that is based on the potential elimination of non-value adding activities. In the pharmaceutical industry of India, lean process improvement is proven to be effective in increasing the efficacy of the logistics processes

Interviewee-4

1.Do you think that ineffective logistics reduces level of organisational performance?

In every business time is the main constraint, if you can't provide the service on time it is useless for the customers and also for the management so if the logistics sector is ineffective the organization will fail to respond to the dynamics of the global market, means timely response is a vital factor or else the customers will look for who can provide it, hence an effective logistics is a critical factor

2.How far do you think that collaborative approach between suppliers and management helps in improving logistics of a pharmaceutical company?

There has been always a tendency in many organizations to follow vertical approaches in decision making where they just focusses on their own department and in the long run it will cause issues to the entire organization hence its vital to have to have a collaborative approach in each and every department and coming on to logistics sector if there is a misalignment between suppliers and management then we can just call it as a disaster

3.How far do you think that appropriate management style enhances logistics of an organisation?

The management style should always be proactive by which what I mean is they should identify the threats in logistics and the shortage of skilled employees therefore it is strategically necessary to train and recruit professionals who has the skillset to mitigate the risk associated in the logistics sector, as we know logistic sector has advanced technologically a lot than the last decade it is vital to have professionals with technical knowhow 0

4.Do you agree that low visibility of cold chain is a major logistics challenge?

Yes, I do agree that low visibility of cold chain is a major challenge in India as they depend too much on reducing transportation cost by transporting goods by roads or sea which can cause major delay. Temperature control to a great extent tends to affect the carrying out of proper pharmaceutical operations. I think, with the help of carrying out proper temperature control, the quality of drugs and medicines is maintained to a great extent.

5. Do you think that lack of understanding for suppliers' perspectives is a key issue   associated with logistics and supply chain management?

I do not think a lack of understanding about supplier perspective is responsible for problems in supply chain management. It is to some extent a reason, but this cannot be an entirely cause behind the problems of the pharmaceutical industry. There are other reasons for problems in supply chain and logistic development.

6. What are your views on the factors related to logistics that help in improving the business operation of the pharmaceutical industry of India?

The initiation of big data and its presence in larger volumes, I think holds a greater potential that yields the observation of data that is present in this sector. It helps the companies to be able to understand the increase in the safety that is often in demand from the healthcare providers.

Interviewee-5

1.Do you think that ineffective logistics reduces level of organisational performance?

An effective logistics system will have the ability to turn a win-lose situations into win-win opportunities and investing in research and development of logistics sector will make them competitive and at the same time the organization has to select the right pool of candidates

2.How far do you think that collaborative approach between suppliers and management helps in improving logistics of a pharmaceutical company?

A collaborative approach between suppliers and management is essential to make the right choices and establish a solid footing in areas where they are really strong and fill the gaps of weakness and which will enable them to forecast the exact sales and forecasts

3.How far do you think that appropriate management style enhances logistics of an organisation?

Sometimes, there is a lack of accurate information to manage the supplies and moreover only with an appropriate management style you can keep account of all the orders and the relative information's

4.Do you agree that low visibility of cold chain is a major logistics challenge?

Yes, I do agree that low visibility of cold chain is a major challenge in India because temperature control is important for controlling potential pharmaceutical operations. The fact that technology is important, I think temperature control measures can be only achieved with the use of interactive technology

5. Do you think that lack of understanding for suppliers' perspectives is a key issue   associated with logistics and supply chain management?

I think it is important to set up clear expectations for proper reporting and supplier communication, which helps in the establishment of clear measurement requirements effectively

6. What are your views on the factors related to logistics that help in improving the business operation of the pharmaceutical industry of India?

I agree that business process management is the main factor that helps in improving logistics processes in the pharmaceutical industry. In India, most of the pharmaceutical companies are benefited for the enabling of proper regulatory compliances that are present in the country.

4.4 Summary

The significant application of qualitative analysis is an integral part of the facilitation of the vital propositions that are to be carried out. In the context of this research, it can be stated that the initiation of this analysis enhanced the perspectives of the research as the researcher gained insight into the views and opinions regarding the problems of logistics in the Indian pharmaceutical industry.

Chapter 5: Discussion and Findings

5.1 Introduction

The fifth chapter of dissertation essentially focuses on the key findings that have been acquired from the research. Based on the features of the research variables that have been identified, this

chapter of dissertation tends to demonstrate the research outcomes derived out if the data analysis that has been conducted by the researcher, It helps in further propagation of the areas that require improvement, which is followed by a description of the future scope of research that needs to be acquired.

5.2 Findings

In accordance with the tenets of the research variable that has been identified, it is important to understand a certain definite perspective. It is to be noted that the Indian pharmaceutical industry is one of the fastest-growing sectors of India. It tends to account for the growth of the Indian economy to a great extent. In addition to this, there has been a substantial increase in the consumption of medicine, which increased the demand for pharma products to a great extent. However, in the present-day scenario, it has been found that there are varied problems that the Indian pharmaceutical industry is facing (Sharma and Modgil, 2019). The primary problem of the Indian pharmaceutical industry is associated with the problem of logistics provisions, which has managed to create a potential hindrance in the supposed activities of this industry largely. The lack of measures into ensuring proper preservation of the medicine are somewhat creating problems and it results in medicine damage, which leads to the businesses incurring an exponential loss to a great extent. The accessibility of the definite systems and the level of definite service often tends to determine the quality of life and refers to the continuity of financial development and serves as a motive. It helps in the creation of the models to effectively promote the management and increase of such industries. Due to the lack of proper services in the logistics, the drug manufacturers are facing problems in the selection and working with the correct logistic partners and led to the improper development of correct transport schemes (Manikandan and Sundarakani, 2019).

Based on this definite background, the research focused on the effective identification of the definite problem that the Indian pharmaceutical industry is essentially facing because of improper logistic services. There are varied factors that are responsible for the facilitation of significant services that helps in the acquisition of changes required. The researcher carried out an extensive interview with the research respondents to gain insight into the views and opinions regarding the logistic problems (Kumar *et al.* 2019). The researcher aimed at identifying the specific problem that the research participants believed are potentially responsible for the presence of improper logistic service in the Indian pharmaceutical industry. While carrying out the research, it has been found that the scientific forecast on the supply and demand of medicine within the premises of the

health sector is required proper improvement to facilitate the medicine supply chain in the pharmaceutical logistics in an effective manner. There are certain definite findings, which the researcher has identified after carrying out the analysis, which further helps in understanding the extent to which such logistic problems are resting hindrances in their potential business processes (Meng *et al.* 2019).

It is important for the pharma companies in India to be able to increase and effectively maximise their efficiency in trying to acquire a proper supply of drugs and medicines. On the other hand, it is also important to consider certain technological provisions, which would help them to be able to carry out the initiation of price-controlled medicines. On the world stage, it cannot be denied that the Indian pharma industry is at a distinct disadvantage, where the companies are unable to effectively compete with other global pharmaceutical companies in the world. On the other hand, due to the presence of improper logistics provision in this industry, India is lagging and is subjected to incur a significant amount of loss, capable enough to create an economic downturn in the global market. The Indian pharmaceutical industry is essentially driven by a myriad of factors that includes an exponential increase in the expenditure of healthcare along with large population-based and patient-based demographics (Kazançoğlu *et al.* 2019). The pharma industry of India is expected to effectively touch the pinnacle of success soon. However, based on the current situation, it is important for the industry to acquire proper logistic provision, which would help them to facilitate their working processes in an effective manner. The research has shown that there has been an increasing level of efficacy in logistics that is responsible for reducing the levels of organisational performance of the pharmaceutical companies operating in India (Gautam and Sharma, 2019). It has been found that the potential actors that are responsible for the lack of political facilitation are that of lack of coordination and that of lack of temperature control provision. It refers to the fact that the lack of coordination between the companies and their supplies create such confusion. The major element of the provision of proper logistics management is associated with the initiation of a proper supply chain. The lack of flexibility in the supply chain activities cannot be overemphasised and it creates an opportunity for the counterfeit manufacturers of drugs. The research participants have further propagated that counterfeit pharmaceuticals are responsible for creating a lot of harm to the business and creating hindrances in the presentation of proper quality medicines that needs to be maintained in every possible manner. Hence, these factors are somewhat responsible for reducing the overall efficiency of organisational performance, as the companies are unable to acquire a flexible logistic process. It further encompasses the inability to be able to identify the ways with which the firms get added value in

their organizational growth within the context of effective cost and operational efficiency (Hämäläinen, 2019).

The presence of technological innovation in the logistics of the pharmaceutical industry tends to largely impact the shipment visibility to a great extent. The presence of improved technology has managed to increase productivity in the supply chain. It is responsible for the minimisation of cost and errors. Trucking, as well as transportation, is essentially carried out with the use of technology. However, the proper implementation of integrated technology would make the logistic process an efficient manifestation of automated processes. It will also help in the proper facilitation of temperature-control and cold chain process (Farhan *et al.* 2019). Apart from the financial impact of such logistics measures, the risk if the supply chain wears a link in a cold chain. It is further responsible for causing concerns about product quality and it eventually results in significant losses due to product spoilage. It results in loss of market share and event loss of life of individuals consuming the medicine, which has degraded from lack of temperature control. The research study has further enumerated that, most of the pharma products are prone to sensitivity in the external environment. Factors including heat and light as well as any kind of deficiency in the pharma transport and storage system might result in damaging the medicine and creating a loss of business. The major problem of logistics in the Indian pharmaceutical industry is the lack of transportation and infrastructure that needs to be compatible with the supply chain procedures. It is often considered to be inadequate to be able to support the manufacturing growth of the country's pharmaceutical sector (Fernando *et al.* 2020).

On the other hand, the presence of proper temperature control is another significant requirement that needs to be considered. It is to be noted that, most of the pharmaceutical products need to be kept at a temperature within the transition period from the manufacturer to the end-user. Due to lack of proper temperature control, the Indian Pharma industry is suffering to a great extent. The lack of utilisation of available technological provisions that degenerates the quality of medicines and it often leads to drug damage to a great extent. The research findings further point out that lack of temperature control for the medicines. If the products are kept under incorrect temperature, then it results in decomposition and often results in diminishing the effects that are intended from the products (Chaudhuri *et al.* 2019).

Furthermore, another emphasis that the research imposes is that of the presence of a collaborative approach between the suppliers and the management of a pharmaceutical company in India. Supply chain collaboration is associated with autonomous working for planning and executing

supply chain operations. It is further responsible for delivering substantial benefits and advantages to their suppliers. However, this lack of collaboration between suppliers and management creates a problem in acquiring collect logistics. The research has stated that there is inaccurate data present, which creates delays in the logistic process of the pharmaceutical industry in India. However, the main challenge in the identification of the supplier development process is miscommunication and lack of transparency. Lack of customer credibility also contributes to the lack of collaborative presence between the potential suppliers and its management (Pournader *et al.* 2019).

In addition to this, the research further propagated that, the initiation of storage and proper transportation processes are crucial factors for the presentation of a flexible logistics for the Indian pharmaceutical industry. The research participants emphasised that, due to the presence of tracking and delays in the delivery of medicines from one region to the other, the lack of temperature control and the less provision of cold chain facilities contribute to the accuracy of such propositions. Hence, the research participants have stated that it is important to acquire a proper understanding of storage and transportation, which needs to be improved (Balas *et al.* 2019).

Due to the lack of visibility of logistics in the Indian pharmaceutical industry, it has resulted in a fragmented market, which is characterised by low visibility of the cold chain. Cold chain, like temperature control, is another factor that needs to be understood for the facilitation of proper medicines. Most of the medicines require preservation at a certain temperature, the absence of which would result in medicine damage. The participants have felt that his problem is one of the major threats to the existing business process of the Indian pharmaceutical industry and is hampering the growth of business in this sector (Mohammed, 2019). Unlike the other global pharmaceutical companies, India is lagging as it is unable to incorporate proper technological facilitation in the industry. Hence, to acquire the proper implementation of the logistics supply chain, it is important to carry out a proper strategic implementation of logistic improvement. Within the Indian pharmaceutical industry, most of the companies have acquired the notions of reverse logistics. It has managed to become a unique area of interest to a great extent. The participants of research tend to focus on the tactical as well as the potential operational problems in the planning and inventory management of the companies. This logistics process adds to the proper practices in the Indian pharmaceutical industry. It fulfils the flaws that hinder the overall processes of these companies. Hence, from this point of view, it can be stated that the presence of the indicators of logistics in the Indian pharmaceutical industry has led to the involvement of

proactive measures required to propagate the pharmaceutical supply chains. It would further help the pharmaceutical companies to be able to gain proper insight into the activities that generate positive economic implications within the potential distribution networks of the pharmaceutical supply chain (Moosivand *et al.* 2019).

5.3 Summary

Considering the above assessment and existing research perception, this chapter managed to focus on the research variables effectively. To understand the potential problems of logistics in the Indian pharmaceutical industry, this chapter managed to identify the key findings that have been identified by the researcher. With the collection of accurate data, it helped the researcher to be able to assess the extent to which the subjective nature of the research process is to be considered. Hence, it can be concluded that this definite chapter has managed to carry out an assessment of identifying the potential challenges of the logistics in the pharmaceutical industry of India.

Chapter 6: Conclusion and Recommendations

6.0 Introduction

In this section, the conclusion has been derived from the findings and analysis of the collected data. The chapter has provided a direct linkage between the objectives and relevant results achieved after data analysis. The chapter has also highlighted the future scope limitations of the researcher.

6.1 linking with objectives

6.1.1 Objective 1: Identifying the importance of logistic in the pharmaceutical industry

It has been found that logistics form an important element of the pharmaceutical industry. It is thus necessary to maintain the correct procedure and needs to develop strategies that would help in shaping logistics. Logistics plays an important role in the effective management and supply of medicines and medical equipment. The Logistics system also plays a major role in managing as well as motivating the employees. As stated by (Pereira *et al.* 2017), the efficient management of supply chain logistics will help the Indian pharmacy to achieve a competitive edge through

delivering high-quality products. Apart from this, having effective storage as well as a transportation system will help in delivering the products on time. The pharmaceutical supply chain is considered as an important tool for marketing products in an effective manner. Distribution of drugs in India has witnessed a paradigm shift and has significant opportunities for contributing towards the growth. As highlighted by (Lorenzini *et al.* 2018), a thorough supply chain is important for the pharmaceutical industry and it is extremely necessary to deliver quality products within the industry. The high-tech logistics at just an expense and must be considered as a mere investment which would open the door towards better accessibility to medicines.

6.1.2 Objective 2: Identification and analysis of factors associated with logistics, which will be helpful for improving the business operation of the pharmaceutical sector of India

Storage and system of transportation are considered important factors that are associated with the development of the pharmaceutical business. The system creates a significant impact on the with respect to appropriate delivery and order making of the drugs and other products. It is also majorly responsible for enhancing the profit generation of the business. Apart from this, the presence and implementation of an appropriate management style play a significant role in boosting the logistic growth of the firm. As stated by (Pachayappan *et al.* 2016), modern pharmaceutical follows the key process of controlling logistics namely good manufacturing practices and good distribution practices. Along with this, (de Campos *et al.* 2017), states that domestic companies in India need to put significant effort into the remaining aspects of the business. It is necessary for them to align with the current scenario and develop strategies that would facilitate the growth of the business (Bolineni, 2016). Apart from these, the other factors which accelerate the growth of the business include empowerment of the patient, increase in the biosimilars, precise medication and 3-D printed drugs. These are included within the complexity of the supply chain logistics of harm companies.

6.1.3 Objective 3: Examining challenges and difficulties related to logistics faced by Indian Pharmaceutical industry

It has been found that there are certain issues with respect to the management operations which hinder the growth of the business. There is a significant development of the challenges in the context of inventory management which is a result of an ineffective management system. Apart from this, temperature control is an important aspect of conducting practical operations. The visibility of shipments also impacts the pharmaceutical operations in India to a certain extent. As stated by (Quadri and Shams, 2018), effective management of warehouses is a key challenge that

has arisen due to increasing the global pharmaceutical market. This has further resulted in an increase in sales volume and the need for warehousing cannot be over focused. (Hou and Lu, 2016) Lack of coordination north challenge that is faced by India pharmaceutical companies

6.1.4 Objective 4: Development of appropriate strategies and methods for improving logistics of Indian pharmaceutical sector

There is a definite need for the development of appropriate strategies that would improve the logistics of Indian pharmacies. It has been found that shifting towards the high-value generics from a significantly low-value business model will help in revising the operations. As stated by (Manikandan and Sundarakani, 2019), there is a need for shifting the business model to high-value generics which would be difficult to copy. The Indian market must focus on the development of generics through which risk can be diversified for sustaining in the market. Apart from this, (Abrol *et al.* 2017), pointed out that it is necessary for the firm to follow the GMPS and SOPs which would significantly ensure the production of supreme quality medicine for the patients. The foreign market is opening for the new generic models and thus, the Indians pharmaceutical firm Sneads it to take advantage of the situation to sustain in the long run.

6.1.5 Objective 5: Observing the outcome of the strategies to improve the logistic of the pharmaceutical industry of India

As stated by (Saravanan and Kumar, 2016), the pharma companies need to immediately adopt and implement the strategies for chasing after results. It has been found that the implementation of the strategies as discussed in the above sections of the research will help in improving the logics supply. Apart from this, it is necessary to undertake certain parameters that would ensure better completion of the activities. According to (Viloria, 2016), manufacturers need to ensure that the drugs effectively read the customer in a timely manner. In India, there is no control of the manufacturers of the multi-layered distribution system. Hence, it is necessary to make changes in the relevant business models and opt for a quality management process.

6.2 Recommendations

1. *The digitalization of Indian pharma:* There has been a significant change in the mindset of the pharmaceutical companies and a digital wave is required to sweep greater revenue in this industry. The pharmaceutical industry needs to consider the technology adoption in various aspects of the operations. With respect to the investment of time and resources, there is a need to research in the drug areas as the pharmaceutical industry is a big complex ecosystem. Digital technology in the pharmaceutical industry will help in transforming it

from infancy to better computational abilities, websites, intranet services, and sales tracking. There are four key areas wherein digital technologies can enforce their developments and will drive success. This would help in delivering more personalized care, active engagement with the customer. Apart from this, it will use the data for engaging with the physicians, driving superior insights, and transforming the various operations in the pharmacy business.

2. Making changes in the supply chain logistics of Indian pharma: in order to tackle the challenges faced by the industry, it is necessary to make changes in the design of the supply chain, which would be more adaptable, flexible as well as responsiveness awards such desired changes. This can be further down through the following:

    - ***Reducing the complexities:*** The Indian Pharmacy comparison of various end to end complexities. It is necessary to reduce such complexities based on which array of benefits would be achieved. Efforts need to be focused on the key areas for immediate results. This includes effective consolidation and optimization of the network and assisting seamless communication across the distributors and customers. Along with this, the visibility of the supply chain needs to be tailored which would improve efficiency. Apart from this, it is crucial to handle the complexity in the portfolio for the effective optimization of the capacitors and skill the underperforming SKUs. This would result in the immediate cutting of costs

    - ***Creating agility as well as visibility:*** Apart from changing the needs of the patients and shit in the pattern of diseases, the market is experiencing a significant shortage of drugs. It is necessary for the pharma companies to react to such markets and ensure that the supply chain is integrated with the key aspects of marketing.

    - ***Developing strong quality as well as appropriate compliances with the system:*** There is an immediate need for tightening the quality process as it is quite imperative to have a robust quality firm with great visibility as well as oversight in the supply chain. It is necessary to develop compliant standard operating procedures with the necessary compliance training. Along with this, data integrity must be ensured, and internal audits must be conducted for ensuring effective management of data within the system

3. *Use of IoT for transforming the pharma industry:* The implementation of IoT will significantly change the operations of logistics. IoT has presented various opportunities for bringing more efficient business operations in the supply chain. The need of the hour is the real-time variability in the warehouse operations. This would help in taking off the products

besides unviable wastage of the space in warehouse facilities. IoT enabled smart warehouses will have sensors that would drastically increase the operation in the warehouse. Thus, the implementation of IoT will ensure a stable supply of drugs on time. It will also help in effective management for optimum inventories based on business guidelines. Apart from this, it will also make the security aspects of the supply chain more robust in nature. It will facilitate bi-directional communication among the information seeker and devices which would eventually track in respective locations.

4. *Investing in other scopes:* It is necessary for the Indian pharmaceutical industry to conduct research and incentives must be paid to the faculty and students who are contributing towards the development of reach formulas. Apart from this, user-friendly approaches must be considered for the establishment of small-scale industries which would further solve the issues with unemployment. There are ample opportunities for developing strategies, which would help in ensuring seamless operation flow in the industry. Thus, the pharma industry has significant capabilities and scope for bringing a new range of products, technology, and quality leadership. This will help its counterparts in directed directions for ascending the innovation curve

6.3 Limitation and Future scope

It can be identified that the researcher has fully explored and identified key problem areas that are faced by the Indian pharmaceutical industry. There are various limitations to the research which need to be considered. The key limitation included the complexity of the pharma industry, getting the most appropriate respondents for the study, and conducting an evaluation for the requirement for digital tools for the pharmacy industry.

The current research study also offers future scope for further including data that are more recent and from a diverse range of secondary sources. Including the information from the secondary sources will significantly offer facts, figures, statistics, and past trends of pharmaceutical logistics. Apart from this, the collection of quantitative data is not sufficient and, in the future, more respondents would be considered from each of the departments in the pharmaceutical industry. Along with this, there is a need to conduct deeper research on the development of strategies for the raw materials producing units that are provided with friendly government policy for SMEs. There is significant scope to conduct further research on the areas of changing dynamics of the market with respect to the implementation of GST. Due to the lack of adequate resources such as time, costs, and guidance, this particular reason could not be researched. Thus, digital tools and its relevant impact would drive the future on each domain of the pharmaceutical industry.

6.4 Summary

The chapter has provided a brief conclusion which has been linked with the objective of the research. The section has successfully demonstrated the linkage between the research objectives and the relevant findings of the research. Based on this, certain recommendations have been provided and future scope alongside certain limitations has also been discussed.

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