ANALYSING WHAT ARE THE WAYS IN WHICH DATA ANALYTICS IS USED IN REDUCING CARBON FOOTPRINTS IN SUPPLY CHAIN MANAGEMENT

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ABSTRACT:

As the global imperative for sustainable practices intensifies, the integration of data analytics into supply chain management emerges as a critical driver for reducing carbon footprints. This study investigates the multifaceted applications of data analytics in reshaping environmental strategies within supply chain operations. From optimising transportation routes to fostering supplier collaboration, each facet explores how data-driven insights contribute to a more eco-friendly and efficient supply chain.
This research unravels the intricate interplay between data analytics and carbon footprint reduction, shedding light on innovative strategies employed by forward-thinking organisations. Through a comprehensive exploration of demand forecasting, real-time monitoring, predictive analytics, effective planning, optimal packaging and regulatory requirements, we uncover how data analytics serves as a transformative force in shaping environmentally conscious supply chain practices.
Furthermore, the study delves into the crucial aspect of reducing carbon footprint across the Indian FMCG supply chain. The integration of transparent carbon accounting and reporting mechanisms ensures organisations measure, monitor, and report their emissions accurately, fostering accountability and steering continual improvement initiatives.

INTRODUCTION:

Data Analytics involves the process of inspecting, cleaning, transforming, and modelling data to extract useful information, draw conclusions, and support decision-making. It encompasses a range of techniques, including statistical analysis, machine learning, and data mining, to uncover patterns, trends, and insights within datasets. In various industries, data analytics is utilised to enhance business performance, optimise processes, and gain a competitive advantage by leveraging the power of data for informed decision-making.
Supply Chain Management (SCM) is the end-to-end process of planning, implementing, and controlling the efficient flow of goods, services, and related information from the point of origin to the point of consumption. It includes organising and combining different tasks like buying, making, moving, storing, and delivering goods.
Applying data analytics in supply chain management is a powerful strategy for minimising carbon footprints. By leveraging data-driven insights, organisations can optimise transportation

routes, enhance energy efficiency, and reduce waste throughout the supply chain. Analysing historical and real-time data enables smarter decision-making, leading to more sustainable practices. This approach allows businesses to identify areas for improvement, such as selecting eco-friendly suppliers, implementing energy-efficient processes, and optimising resource utilisation. Overall, data analytics serves as a key tool in the pursuit of environmentally conscious supply chain management, contributing to reduced carbon emissions and a more sustainable business ecosystem.

REVIEW OF LITERATURE:

I. Kaleel Ahmed, Senthil Kumar, Nallusamy conducted a research on the topic 'Study on Environmental Impact through Analysis of Big Data of Sustainable and Green Supply Chain Management': Due to climate changes and global warming, customers and companies are increasingly looking at how their carbon footprint impacts and how data can help achieve a sustainable and green supply chain. As a result, research was done to examine how big data might be used to improve green supply chain management and the environmental impact. Green SCM is implemented in the basic stages of the supply chain, like product design, purchase, production, packaging, and logistics.

II. Taofeeq Durojaye Moshood, Gusman Nawanir, Fatimah Mahmud, Shahryar Sorooshian, A.Q.Adeleke conducted a research on the topic 'Green and low carbon matters: A systematic review of the past, today and future on sustainability supply chain management practices among manufacturing industry': This study seeks to explore the inquiry: "What motivates and how do organisations implement sustainable strategies in developing nations to enhance sustainable practices within the manufacturing industry's supply chain management?". It also indicates that sustainable supply chains should follow poly-centred structures to allow businesses to react more adaptable to expertise, experience, and supply chain contexts at appropriate levels.

III. Rajnish Kler, Roshan Gangurde, Samariddin Elmirzaev, Md Shamim Hossain, Nhut V.T.Vo, Tien V.T. Nguyen and P.Naveen Kumar conducted a research on the topic 'Optimization of Meat and Poultry Farm Inventory Stock Using Data Analytics for Green Supply Chain Network': This paper analyses meat and poultry farms from two perspectives. In the first step, the IOT-based system is implemented for traceability and demand-supply monitoring. The second step includes optimization of the supply network to reduce the carbon emissions from transportation. Both steps take data analytics as input to process the final result for the farm to run and optimise.

IV. Eleni Mangina, Pranav Kashyap Narasimhan , Mohammad Sherif conducted a research on the topic,Data Analytics for sustainable Global Supply Chains: The demand for transport and goods in logistics is increasing, hence it is essential that there is adequate planning by government,businesses to meet the social economic and environmental needs

of a fast -growing supply chain network.Transportation is one of the main contributors to climate change and largely driven by combustion of fossil fuels which results in the emission of greenhouse gases. So effective measures and policies have to be taken to reduce environmental damage due to increased vehicular pollution emissions and developing sustainable , low- carbon regional transport and logistics systems.

V. Swati Verma, Vrinda Malhotra, Purba Halady Rao conducted a research on the topic 'Exploring Initiatives to Measure and Reduce Carbon Footprints Across Indian FMCG Supply Chain': The paper describes an empirical analysis conducted over the supply chains of some Indian FMCG companies with the objective to assess the extent of initiatives towards measuring and reducing carbon footprints throughout the supply chains. If implemented, the carbon footprint measurement method would greatly reduce carbon footprints in each of the five categories that were taken into consideration: manufacturing, outbound logistics, storage & distribution, and packaging logistics.

VI. Vasudev Trivedi, Mahdi Fathi conducted a research on the topic 'Data Analytics Applications in Reducing the Emission Footprint of an Energy System': This paper explores and analyses how data analytics through the four main pillars such as descriptive analytics, diagnostic analytics, predictive analytics, and prescriptive analytics is playing a pivotal role in reducing the emission footprint of an energy system. The major goal of data analytics applications in lowering an energy system's emission footprint is to make well-informed judgements that can be regularly assessed against past and present occurrences to gauge the prediction models efficacy and improve result accuracy.

OBJECTIVES:

- To determine the most environmentally friendly modes of transportation to minimise carbon emissions.
- To implement real time monitoring of carbon emissions to optimise decision making in supply chain management.
- To employ specific analytics driven measures to adapt to evolving regulatory requirements, ensuring compliance, and promoting sustainable practices.
- To identify how effective packaging and delivery control carbon emissions and to analyse the use of predictive analytics to forecast future carbon emissions in the Supply Chain

NEED FOR THE STUDY:

The impact of carbon footprints in supply chain management is multifaceted, influencing environmental sustainability, operational efficiency, and overall corporate responsibility. Data Analytics optimises supply chain processes by understanding supply chain activities, identifying inefficiencies and areas of excess resource consumption to enable targeted optimisation. It also helps in reducing carbon emissions in areas like transportation, real time monitoring, regulatory

compliances, packaging and delivering, and forecast carbon emissions. So, the use of data analytics in reducing carbon emissions in supply chain management is the need for the study.

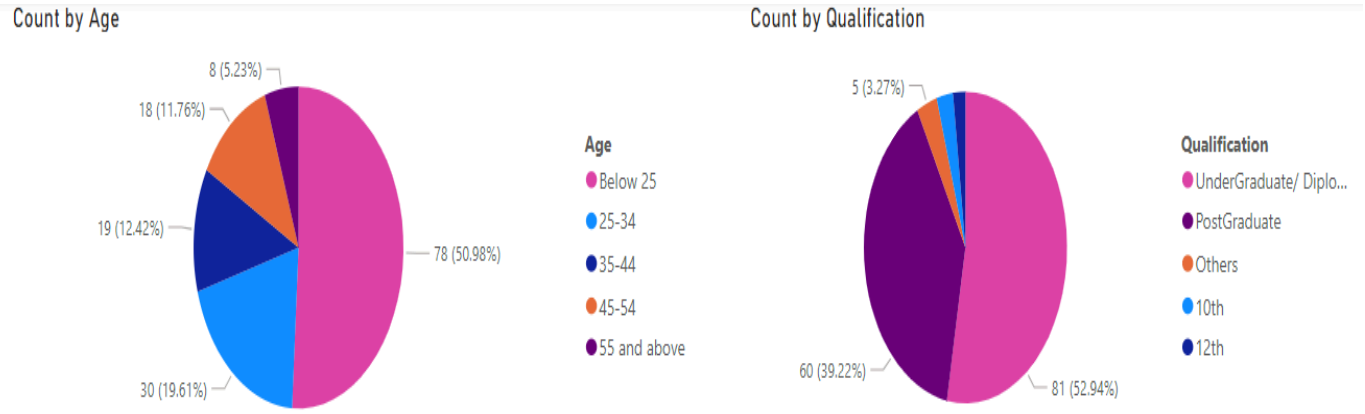
SCOPE FOR THE STUDY:

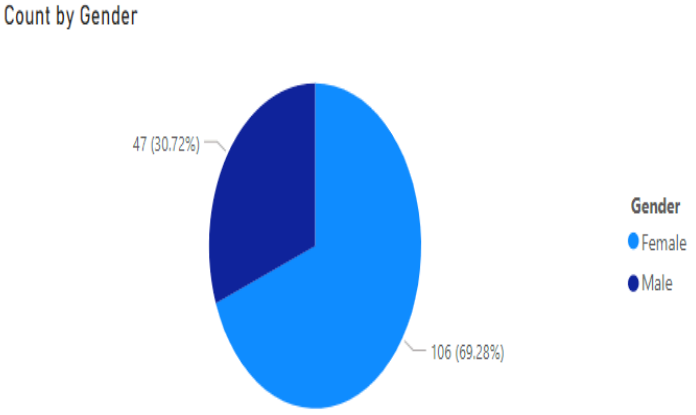
RESEARCH METHODOLOGY:

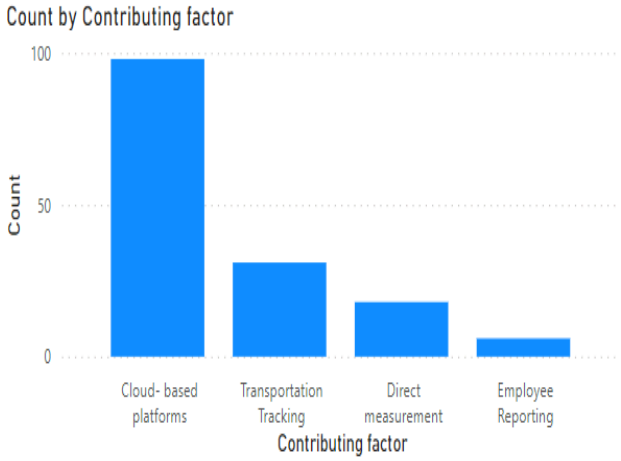
RESEARCH DESIGN:

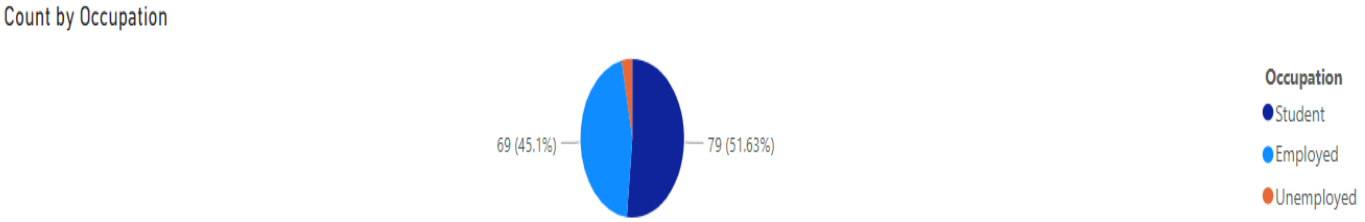
ANALYSIS AND INTERPRETATION:

PERCENTAGE CHARTS:









INFERENCES:

CONCLUSION: